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SOME HYPOTHESES ON THE DEVELOPMENT OF EARLY CIVILIZATIONS *

ROBERT M. ADAMS

GROSS PARALLELS in patterns of development of early civilizations have long invited closer inspection. Attempts to formulate these processes of growth into a single general statement of cause and effect have been out of fashion in anthropology for many years now, but interest has remained high in the general problem of comparison. Leaving aside studies concerned particularly with progressive changes in styles or technologies, the greatest promise seems to attach currently to studies focused on the growing network of formal, supra-kin institutions which characterized each of the early civilizations for which archaeological or historic documentation exists.

The approach taken here has much in common with that of V. Gordon Childe (1942, 1952), and certainly leans heavily on the rich store of archaeological insight he has made available for the Old World. Childe is only tangentially concerned with the minutiae of historical process, however; he sees the achievement of civilization as the resolution of a series of contradictions between population growth, environmental limitations, and the like on one hand, and the kind and degree of means and organization of production on the other, but has never prepared a systematic account of the stey-by-step resolution of these contradictions. Usually the functional interrelationships of his stages and the presumed agencies of change are either given highly generalized and rationalistic explanations or are assumed and not inquired into. In this respect, Julian Steward's functional interpretations of eras and sequences in his study of "Culture Causality and Law" (1949) furnish the more useful model, although his formulations to date remain on the whole programmatic rather than specific. Perhaps most directly, this paper utilizes Gordon R. Willey's conception of developmental trends as tools for comparative study (Willey 1950). Concerned with the *direction* of change over time of particular recurrent institutions in variable socio-cultural settings, this approach makes possible an appreciation of many significant cross-cultural regularities and differences even where the limitations of archaeological evidence preclude a full understanding of these institutions in their wider functional contexts.

What is attempted here is not a review of the whole range of material dealt with by Willey, Steward, or Childe, but rather a more intensive and tentatively "explanatory" — if still preliminary and necessarily brief — examination solely of the transition to full urban life. Partly, it is hoped to shed additional light on the apparent interplay of forces leading to this momentous change. Partly, it may be useful simply as a series of reflections on the processes Steward and Willey have outlined from a point of view, unlike their own, that has been shaped primarily by Old World data. Finally, it also stems in part from the desire to see a comparative method restored to common use in archaeology as an important mode of analysis.

Ideally, a comparison of developmental trends in civilization should embrace every society which developed an essentially independent configuration of the attributes of civilized life, whether or not it received a number of its component traits by diffusion from some other area. In practice, however, a narrower approach is dictated by present limitations in our data. Thus, the backgrounds for civilization in China and the Indus Valley remain practically unknown, while knowledge of the formative stages of civilization in Egypt is derived almost entirely from graves and hence contains crucial areas of uncertainty on

* This is a slightly modified version of a paper entitled "Institutional Patterns and the Development of Civilization," which was read at the Annual Meeting of the Society for American Archaeology in Bloomington, Indiana, on May 5, 1955. Some of the problems dealt with here are also touched on in a symposium on irrigation civilizations (Steward and others 1955) that appeared too late to be utilized.

domestic life and settlement pattern. By contrast at least, we are much better off in Mesoamerica, Peru, and Mesopotamia, so that it seems useful to limit a comparative discussion to these regions. Even in this latter group, of course, the gross outlines of development are not yet clear and unambiguous, and it is cheerfully expected that the hypotheses on social process put forward here will need substantial revision in the light of further work.

Our story begins in each region with an established network of agricultural communities, perhaps centering their socio-religious life around small shrines like those known for Coastal Chavín in Peru and the Early Ubaid of Mesopotamia. Such excavations as have been conducted in private houses of the time suggest little inter-community specialization beyond that normally to be expected based on age and sex differences, although a distinction between towns or regional seats and smaller, less differentiated hamlets perhaps already was coming into being (for example, Tlatilco and Zacatenco in the Valley of Mexico, if the radiocarbon evidence that these sites are roughly contemporary can be trusted).

My point is that the formal integration of these communities into areal groupings seems in each case first to have been achieved on a significant scale by individuals whose authority devolved from their positions as religious spokesmen. Thus, one recalls that the earliest monumental architecture consists of unambiguous temples only, save possibly in Mesoamerica where Armillas (1951a: 23) has argued that temple mounds were briefly preceded by funerary mounds for which an important role in the day-to-day religious life cannot yet be established. Moreover, in spite of regional differences in emphasis (compare Willey 1950: 235) the archaeological provenance makes it likely that subsequent elaborations of craftsmanship, whether luxury ceramics, ritual objects, or architectual embellishments, were provided mainly for the temples and their spokesmen rather than for the satisfaction of private and secular tastes, and the variations of style which are characteristic of this "Early Classic" era seem to be polarized in local traditions ranging around the more important of the emerging temple centers. In fact, to judge from the placing and content of tombs and representational art, individual status differences were largely derived from, or at least closely connected with, leadership in the temples. Finally, the initially open and undefended aspect of these communities together with the rarity of military equipment and pictorial representations of martial activities is perhaps more consistent with the assumption of temple dominance than with a well-developed secular authority and strong status differences. Peru is somewhat precocious in this respect, for Willey (1953: 358) traces the construction of defensive redoubts and presumably intervalley raiding back to the White-on-red horizon, not long after the earliest monumental ceremonial structures.

This early temple dominance is perhaps most "understandable" where irrigation or other systems of intensive cultivation requiring the planned efforts of sizeable groups were necessary and practical, as in southern Mesopotamia and some of the coastal Peruvian valleys, for one could argue that their construction and maintenance increasingly required a kind of authoritative leadership not well developed in villages engaged independently in subsistence agriculture. But, as is shown in lowland Mesoamerica, increasing population and growing diversity in intra- and intercommunity tasks could lead to the rise of the same institutions even where irrigation was an apparently negligible factor.

For a time, it seems probable that the religious elite played an increasingly important role in the administration of group activities as communities grew larger and more complex. Archaeological evidence for these growing administrative functions perhaps can be seen in the general replacement of structures apparently intended exclusively for sacred use by structures which, while retaining an important sacred component, are modified for use as dwellings for the elite or as administrative centers (compare Thompson 1954: 93). The change in emphasis from temple to "palace" in the A-V complex at Uaxactun (Smith 1950, Figs. 2-5), the frequent substitution by late Mochica times in North Coast Peru of pyramid-dwelling-construction-"palace" complexes for the isolated pyramid mounds characteristic of earlier periods (Willey 1953: 354-6), and the increasing importance of storehouses and other ancillary buildings within temple precincts during the Protoliterate and Early Dynastic periods in Mesopotamia (compare, for example, the Tell Uqair Painted Temple [Lloyd and Safar 1943] with later temples from the Diyala

region [Delougaz 1940; Delougaz and Lloyd 1942]) furnish convenient examples.

But the growth processes we are concerned with here did not end with the institutionalization of temple authority. It is our second hypothesis that forces inherent in temple control, some of them only coming into being in societies already integrated by temple leadership, gradually weakened the foundations on which temple supremacy rested. The increasing heterogeneity of society, for example, although largely a product at first of elaborations of the temple establishments, must have decreased the effectiveness of purely religious sanctions in the administration of community affairs. Warfare, previously confined mainly to raids, increased in scale and importance. Partly this may have been the result of an increasingly precarious balance of population with agricultural resources, as Steward (1949: 23) suggests, but it should be remembered also that the increasing wealth in the temples offered vastly greater inducements to military activity than had existed previously. Thus in a sense, an era of temple dominance — however "classic" its religious or artistic expression — may be viewed as a transitional period necessary for the emergence of social groups and concepts profoundly at variance with those reflected in the traditional homogeneity and group solidarity of folk-village life.

Under the influence of all these forces the effective integration of communities in each of the areas required an increasingly authoritarian, militaristic, and centralized character that was also fundamentally in opposition to the traditional activities of the temple. The priestly hierarchies met this crisis with varying success, but only survived as corporate entities still responsible for an important share of the secular affairs of the groups under their charge where they were able to adopt the same autocratic outlook as their rising secular competitors. Architectural manifestations of this shift in outlook perhaps may be seen in the circumvallation of temple compounds in Early Dynastic Mesopotamia (Delougaz 1940) and in the enclosure of North Coast Peruvian pyramid mounds within fortified redoubts (Willey 1953: 358). An increasingly warlike aspect to the clergy can be documented more graphically in the Late Classic of the lowland Maya area with numerous reliefs and the Bonampak murals (Armillas 1951b).

While this trend was underway, individuals also began to emerge, either from the ranks of temple personnel or independently, who sought to provide political and especially military leadership with less regard for the old priestly prerogatives or for the propitiation of deities the temples served. Here one thinks of the "barbarians" active in the Toltec forces (Armillas 1951a: 29), of the rise of kings alongside temple hierarchies in Early Dynastic Mesopotamia (Falkenstein 1954: 795 and following), and of the somewhat more fluid distinction between nobility and clergy among the Inca (Kirchoff 1949). To some extent, the competition for control that seems to have ensued may consciously have been directed toward the expansion of royal wealth and authority at the expense of the temples. We have the complaint of a Mesopotamian reformer, for example, that the oxen of the god (read temple) were being appropriated illegally to plow the fields of the ruling lord (Barton 1929: 79). The suppression of a priestly attempt to seize control under the Inca in Peru is reported to have resulted in changes in governmental structure which also may have been thus openly motivated (Kirchoff 1949: 308). But consciousness is not a necessary assumption for the argument, and it seems certain that *some* kind of religious authority was invoked by every contending party. In Mesoamerica, for example, it has been suggested (Armillas 1951a: 29) that the legendary struggle for power between 2 gods, Quetzalcoatl and Tezcatlipoca, may reflect a civil war between established supporters of the former and rising groups bent on military expansion. Perhaps more generally characteristic of the secular rulers was a tendency to expand the areas in which they might act on their own authority without acknowledgement of divine jurisdiction. A successful Early Dynastic ruler in southern Mesopotamia, for example, stressed repeatedly the support he had received from his city's chief deity, and sought to justify this support by proclaiming himself the "man who carries out the word (of the god)" (Barton 1929: 35), while his Akkadian successors generally invoked the names of their deities only to curse those who might later attempt to deface their monuments (Barton 1929: 121).

The point is that the steps which needed to be taken by *any* leadership, whether priest, war leader, or king, would seem to have under-

mined or at least circumscribed the capacity of religious leaders *qua* religious leaders effectively to control many of their communities' most important activities. Thus, the need for a specialized defensive force probably was felt by the temples more strongly than any other institutional body — note that a burning temple served as the Aztec symbol for a conquered town, while the looting of its temples must have been almost invariably associated also with the capture of a Sumerian city (Barton 1929: 58, 89) — yet the appointment of permanent warriors served quickly to enhance the authority of the secular figures who commanded them and weakened further the internal position of the temples. It is not surprising that Early Dynastic and Akkadian rulers in Mesopotamia frequently began to acquire large estates worked by armed followers responsible only to them (Falkenstein 1954: 800), that an Aztec tradition records the granting of captured lands and their occupants to leading warriors in fief from the king (Valliant 1944: 97), or that the ruling Inca rewarded the nobility in his victorious armies with land (Bram 1941: 73) and llamas by the hundreds (Kirchoff 1949: 299). All of these measures contributed to undermining the political authority of the temples, both directly and by providing incentives for successful conquest which could only increase the frequency of military crises and thus weaken temple leadership further.

Similarly, an extension of the market first may have been encouraged by the temples as a way of solidifying their control and strengthening the integrative ties in the communities under their charge. In all 3 areas, craft products previously reserved for sacred use were finally made available to the populace at large. For example, there was a breakdown in the long-established separation between ceremonial-mortuary and domestic pottery traditions in Tiahuanaco Peru, with mold-making technics applicable to mass-production being applied to the latter for the first time (Ford and Willey 1949: 68). In lowland Mesoamerica we find effigy censers, apparently manufactured by craftsmen in a tightly integrated tradition, not only in the ceremonial precincts of Mayapan but also in household shrines (Smith and Ruppert 1953). In Early Dynastic Mesopotamia, one can point to an extension in the use of cylinder seals from almost exclusively sacred precincts to even some of the more modest private houses and graves. But in the long run, the growth of the market acted to make both craftsmen and consumers less dependent on the temples and created an independently powerful group of private traders. This in turn widened popular demands for luxury products, and metal for tools and weapons, which could only be obtained by the very kind of increasing emphasis on aggrandizement that strengthened warrior castes at the expense of temple leadership.

Although these trends proceeded at different rates in each "nuclear" area or subarea (compare Willey 1950: 239-40), the end result tended uniformly to be the overshadowing of authority based specifically in the temples by the authority of dynasts ruling nascent territorial states and bending every effort toward military and political expansion.

Whatever names we give the units of time into which the sequence of events thus briefly described is divided up, it is clear, first, that these historical processes are continuous, so that *any* set of units is in a very real sense artificial, and second, that the exact combination and sequence of trends is highly variable not only as we compare Mesopotamia with Mesoamerica and Peru, but also between cultural or ecological subareas of these larger entities. If the purpose of time divisions is to facilitate comparison, it would seem to follow that rigorous chronological distinctions between successive eras are both highly dubious and not likely to occur as significant parallels in different historical traditions. What *will* occur, if there is any substance to the hypotheses offered here, are significant parallels in the most characteristic expressions that successive eras assume, what Steward calls their "culminations." Thus, the *origins* of militarism may differ widely, ranging, to take their time dimension alone, from Late Formative in Peru to Late Florescent or Classic in southern Mesopotamia and parts of Mesoamerica; but an era in which this has become the dominant trend always follows an era of temple dominance in the sequences of early civilizations and exhibits many striking regularities as we move from one area to another. Our remaining task, then, is to outline a series of culminations behind which might lie the interplay of conflicting and mutually reinforcing trends already suggested.

The Formative Era is not of primary interest here. It is characterized by subsistence farming,

village settlements, perhaps a few small shrines, and the general absence of craft specialization and class distinctions in the archaeological record. This definition differs from that of most New World culture historians only in that the era is explicitly considered to have ended when the changed needs of communities transformed earlier part-time cult specialists into a theocratic class serving as a kind of organizing authority. On present evidence, this may have occurred after Eridu IX in southern Mesopotamia and Gawra XIV in Assyria; after Providencia and perhaps Tlatilco in highland Mesoamerica and near the end of Chicanel in the Petén; after the Chavín horizon in at least the Virú Valley of Peru, but before the construction of Chavín de Huántar in the highlands. But we would stress again the futility, for comparative purposes at least, of defining eras with more concern for their precise chronological limits than for their characteristic content.

A Florescent or Classic Era is posited next, here as elsewhere, embracing the growth of temple centers and culminating in the dominance of priestly hierarchies. Perhaps its most important criteria may be found in largely coterminous religious and political institutions, equipped with a newly formalized religious symbolism; in small groups of craft specialists producing mainly for the temples; in the general absence of status distinctions beyond those found in the temple establishments; in the presence of warfare but not yet of a full-time soldiery.

Finally, a Militaristic or Dynastic Era corresponds roughly to the attainment of a way of life which may be called urban whatever the size of its settlements. Politically, it comes to be characterized by a new kind of secular-territorial government, although the older religious elites continued their sacred functions alongside the new administrators. A considerable portion of the energies of these states were directed toward expansion, and warfare was a common and accepted instrument of policy. Systems of developed class distinctions, including slavery, were at the basis of society, and productive facilities, principally land, tended gradually to pass into large-scale private ownership. Mass-produced craft products were made available by greatly increased numbers of artisans to large sections of society through a market. In southern Mesopotamia, the beginning of the Early Dynastic period coincides pretty well with the attainment of this level, as may the occupation of Tula in Central Mexico. Perhaps the shift from ceremonial centers to differentiated "urban elite" and "lay" centers, which Schaedel (1951: 234) believes began in North Coast Peru at about the time of the Tiahuanaco horizon, also corresponds to this transition; however, the social complexity implied by some Mohica pottery may suggest an earlier beginning for parts of the area.

Such a general outline as this obviously can never be reconciled completely with the specific historical sequences to which it has been applied. At present it is still largely speculative, supported by the weak and ambiguous lines of evidence that have been alluded to only because they seem frequently to converge to form a pattern. Moreover, it is at best a schematization, concerned only with the rough shaping of major integrative institutions under the pressure of social forces which apparently paralleled each other in every area where civilization came into being. The institutions produced by these forces, of course, were everywhere different, for they were not the outcome of a smoothly inevitable course of societal growth but of opposing trends developing simultaneously and at different rates. Moreover, they were certainly also affected by local differences in technology, sources of subsistence, physical and biological environment, and a host of "nonmaterial" factors. But in their main outlines these institutions were nonetheless frequently very similar, and the advantage of this, or any, provisional scheme is that, with its aid, local points of variance can quickly be exposed for inspection. Sometimes it may be shown that the individual sequence has been wrongly interpreted due to a failure to consider the generalized processes believed to have been at work from a comparative study of the data. At other times the particular sequence will be substantiated and, strengthened by this renewed scrutiny, will demand revision of the general scheme itself, or at least of "explanations" offered for other areas in light of the variation thus documented. Systematically in this fashion, it should be possible to increase both understanding of developments within each early civilization and capacity to generalize about historical processes involved in the appearance of all of them.

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PERUVIAN PACCHAS AND KEROS

S. K. LOTHROP

TWO DISTINCTIVE types of wooden drinking vessels, known as *keros* and *pacchas*, were manufactured in Peru both before and after the Spanish conquest. Thus they exemplify the transition from archaeology to history and ethnology. Each has counterparts in pottery, metal, or stone, but the majority are of wood, usually decorated with colored motifs produced by paint with a lacquer base. This also was used on a few unique vessels of eccentric shapes (Fig. 64 *b*). Keros are fairly common; pacchas exceedingly rare. Little has been written about either group.

KEROS

The word *kero* is a Quechua term, defined in the Torres Rubio grammar as a "vase of wood from which they drink chicha" (Saville 1929: 244). In the 17th century, Father Cobo wrote (Vol. 4, p. 169), "The most common of these [drinking cups] are of wood, of the shape of our glass tumblers, wider at the top than the bottom. They hold a pint of wine. They are painted outside with a kind of lacquer, very relucent in various colors, and with different raised figures and paintings. These wooden vessels are called *queros*."

Vessels of kero shape, sometimes modified by the addition of a feline, human, or llama head in relief, apparently originated in pottery of the Classical Tiahuanaco period several centuries before the Spanish conquest. This culture developed in the southern highlands of Peru and the adjacent portions of Bolivia, but, between 1000 and 1200, Tiahuanaco styles spread over most of Peru, northern Chile, and northwestern Argentina. The kero shape in pottery thus attained a distribution from Moche in Peru (S. Lat. 8°) to La Sirena in Chile (S. Lat. 30°), a distance of about 1600 miles. On the Peruvian coast, vessels of this shape occasionally were also made of metal, stone, and wood.

We illustrate in Figure 64 *d* an ancient wooden kero which, on the basis of design, can be placed in the Coastal Tiahuanaco period (around A.D. 1000-1200). This specimen is definitely archaeological and has weathered in the ground. Decoration is confined to a raised band carved in relief. Pottery vessels of similar age with comparable decoration are found chiefly in the Huaura valley on the central coast of Peru (Fig. 64 *a*, *a'*).

Another small group of wooden keros has incised geometric decoration with an emphasis on parallel lines (Fig. 64 *c*, *f*). Some specimens are preconquest; some show the marks of steel tools and are of later date. Wooden vessels of this type definitely have been found on the north coast of Peru. It is possible, however, that they were made elsewhere, for several specimens are attributed to the vicinity of Cuzco. A piece in the museum in Lima, published on a post card, combines parallel line incising and lacquer painted decoration. At present, we find nothing to indicate that the coastal wooden keros were ancestral to those of the interior; both seemingly were derived independently from Classical Tiahuanaco pottery.

Highland keros usually are decorated with a lustrous paint, today often subdued in tone by dirt which has worked into the cracks. Nordenskiöld (1931: 95-100) has shown that this paint has a resinous vegetal base and should be classed as a lacquer. He noted that similar paint was employed on wooden paddles and centerboards found in graves on the south coast of Peru. In addition, he has published (1931, Fig. 11) a set of lacquerer's equipment found in a grave near Ica. This consists of leather bags containing pigments and lacquer, also shells used as mixing bowls. Colors on specimens examined by the writer include 2 reds, pink, 2 yellows, 2 greens, blue, black, and white. Nordenskiöld (1931) had some analyses made and he lists the following colors: red (cinnabar), brick red (cinnabar and gypsum), dark red (cinnabar and dark sand), pale rose (powdered limestone), orange (realgar = arsenic monosulphide), yellow (orpiment = yellow arsenic), grayish green (powdered obsidian), and dark green (malachite = hydrous carbonate of copper). He notes the presence of light brown, ultramarine, and black. Posnansky (Nordenskiöld 1931: 98) states that pigments also were manufactured from lead oxide, antimony oxide, ferrous oxide, turquoise, and kaolin. In short, a wide range of colors appears on keros.

Paint was applied by 2 methods. Sometimes a smooth surface was coated directly (Fig. 65 *a*, *a'*). Frequently, however, the areas to be colored were slightly sunk and then filled with pigment, a technic found on ancient pottery and modern gourds in Mexico. This gives the effect of cloisonné but there is no indication that the paint was hardened by baking. The true cloisonné process may have been known in Southern Peru, however, for metal specimens exist with colors separated by soldered wires (Lothrop 1937, Pl. 38 *c*).

The subjects painted on keros are of wide range. Processions (Fig. 65 *a*), wars, hunting (Fig. 68 *a*), and drinking scenes (Fig. 67 *b'*) are perhaps the most common major motifs. Textile-like patterns also are important and of infinite variety (Fig. 65 *b'*, *c*). Other motifs include trees, flowers, birds, animals, insects, and fish. Rowe (1946: 245) writes, "The designs are among

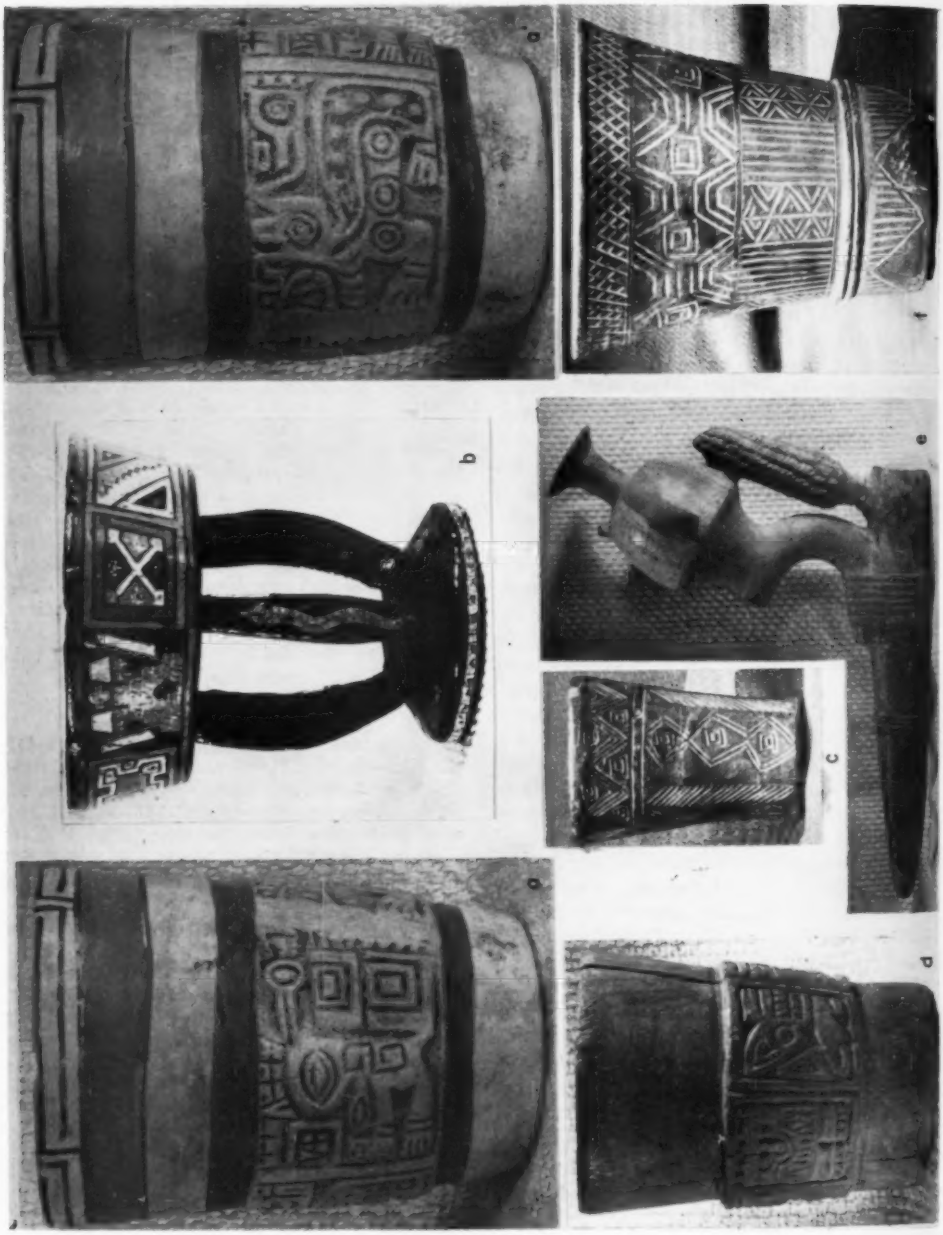

FIG. 64. *a'*, pottery vessel of kero shape; Hacienda Humaya, Huaura valley; height, 6¼ in. *b*, wooden bowl with lacquer decoration in light and dark green, black, white, and red; "Peru;" 5¾ in. *c*, *f*, incised wooden keros, south coast of Peru; heights, 2, 8 in. *d*, wooden kero of coastal Tiahuanaco style, south coast of Peru; height, 4¼ in. *e*, pottery paccha; Lambayeque; length of base, 11¾ in. All specimens in Peabody Museum, Harvard University.

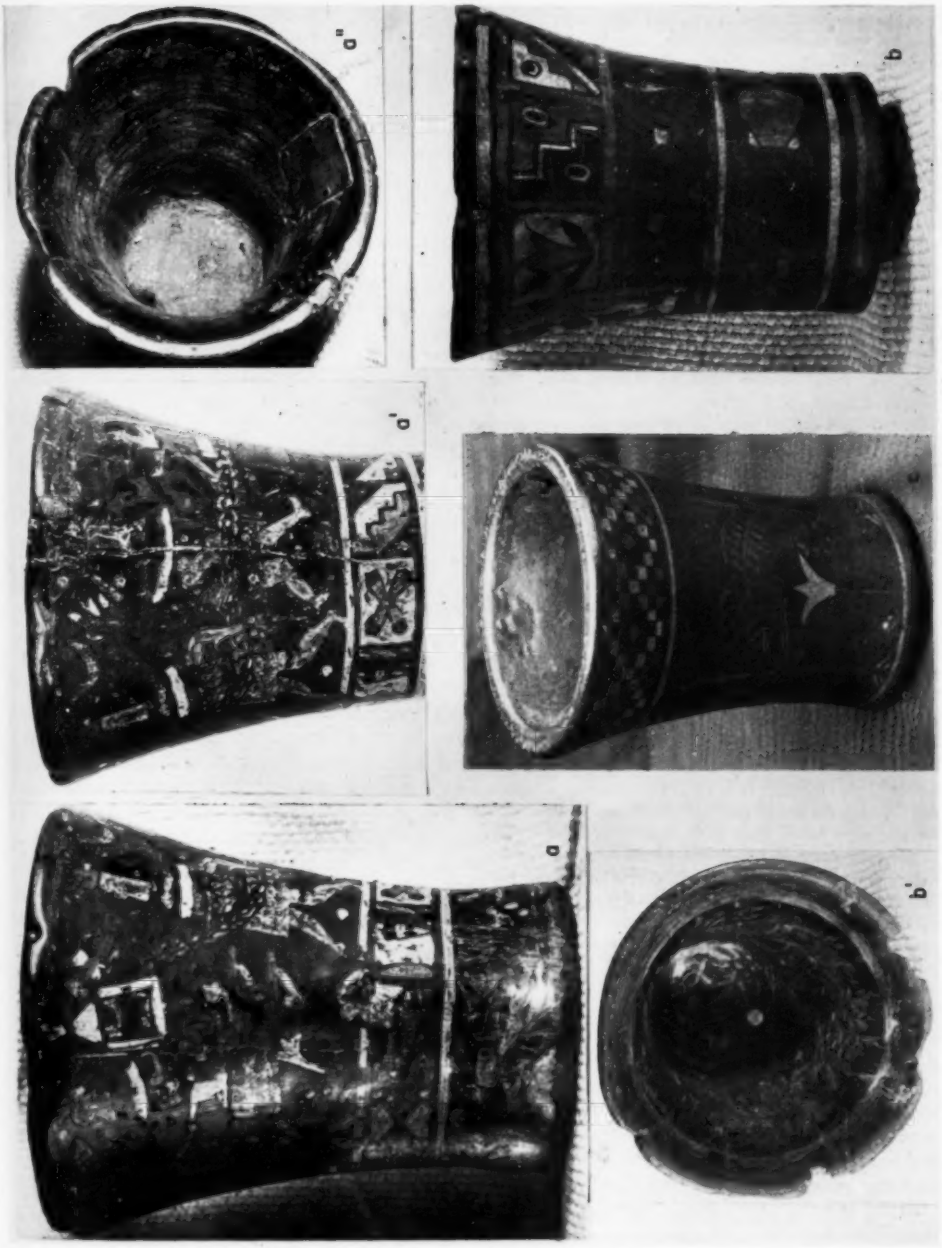

FIG. 65. *a*, *a'*, *a''*, pre-Spanish kero; vicinity of Cuzco; height, 8 in. *b*, *b'*, detachable kero forming part of a paccha (Fig. 67 *b*). *c*, pre-Spanish kero; height, 8 in.

the finest products of Inca art, and are worthy of comparison with the best work of the Mexican codices."

Some generalized remarks can be made about the painted decoration. In the battle and hunting scenes, such typical highland equipment as axes, halberds, clubs, slings, and shields are depicted. In addition, however, bows and arrows are frequently shown, also palm trees and monkeys (Figs. 65 *c*, 67 *a*). The bow was known as a toy but not employed as a weapon in the highlands. It was, however, the principal weapon of the forest Indians east of the Andes. These tropical traits suggest that not only was the wood for keros imported to the highlands but that part at least of the manufacture centered in the lowlands. Seated Inca officials shown with forest Indians (Fig 68 *a*) imply a region under Inca political control. Many keros obviously are of postconquest date. Spanish clothing, guitars, harps, brass trumpets, angels, and Negroes are not indigenous Peruvian traits. Historical descriptions place the use of keros in the Colonial period as also do the repairs of cracks with iron strips and nails (Fig. 65 *a''*). In addition, there are many keros with painted designs which do not imply Spanish influence but appear purely indigenous. In such cases, however, the technic of manufacture may suggest a date, for the interior walls usually were not sufficiently polished to remove all tool marks.

In most of the keros we have examined the interior walls show long vertical cuts which could have only been made with a narrow-bladed chisel (Fig. 65 *b'*). Tools of this type came into existence in Peru during the Mochica period but they were of copper and too soft to make long cuts in hard wood. A few examples of such chisels may be of Inca date and perhaps are bronze. The inference is strong, however, that sharply defined cuts in hard woods such as mahogany or guayacán indicate the use of steel chisels of postconquest date. On the other hand, there is evidence of another technic of manufacture which did not call for steel tools and therefore may be aboriginal. The interior of the kero illustrated in Figure 65 *a''* does not reveal narrow vertical cuts but a series of horizontal grooves and ridges. Apparently this vessel was shaped, at least in part, by grinding with a circular motion. The difference in quality between the cut and the ground surfaces is even more apparent to the hand than the eye.

Painted decoration on the specimen under discussion suggests a preconquest date. The scene depicts a chief on a canopied litter supported by 4 men while a procession carries before him a long braided object painted yellow. This must represent the Inca Huascar and his celebrated gold "chain," so heavy that 200 men were needed to carry it. We have shown elsewhere (Lothrop 1938: 45) that the name Huascar means cable and the "chain" in reality was a gold plated rope.

The kero here described was presented to the writer by the late Julio C. Tello, in whose house it stood for many years. The interpretation of the design and manufacturing technic here presented were discussed with Tello who expressed himself in agreement.

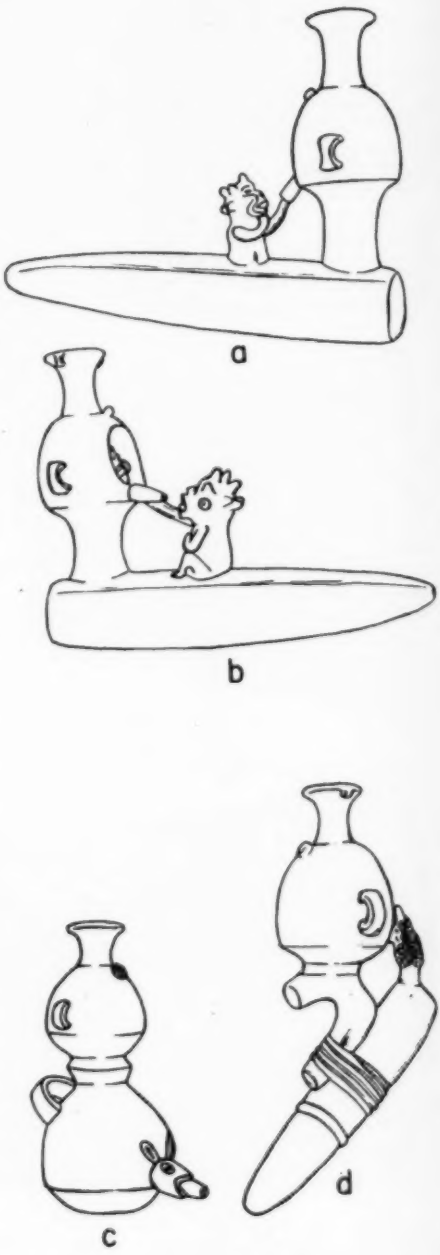

FIG. 66. Pottery pacchas after d'Harcourt and Joyce in Saville, 1926.

Figure 65 *c* illustrates another vessel which shows no marks of steel tools. It is adorned with a check pattern, palm trees, and flowers. An unusual feature is that the inner rim is decorated by 4 painted birds. The interior walls exhibit faint traces of circular grinding.

The 2 specimens illustrated in Figure 64 *c, d* have interior walls so smooth that the technic of manufacture is obscured, but *d* definitely is an archaeological piece which has been underground. All other vessels we illustrate were made with steel tools.

Our observations on manufacturing processes have been confined to methods of finishing the interior walls. We do not know how the bulk of the interior was removed. In Mexico alabaster jars are found, mostly dating from the Aztec period, which are comparable in size to Peruvian keros. An unfinished specimen reveals that the initial cutting of the interior was done after the extenior had been shaped but not polished. It was accomplished with large tubular drills (Saville 1900). This process left a series of round columns which were broken off. The interior walls and base could then be shaped by abrasion. A similar technic may have been employed in Peru.

Painted wooden keros have been found from Ecuador to the Argentine but most of them come from the southern highlands of Peru. They exist literally by the hundreds but no comprehensive study has yet appeared. They are, however, an important and almost untouched field for research into secular customs and material culture of the Inca regime, for they often are adorned with scenes from daily life. Contemporary pictorial sources for studies of the past are not common in the New World. Mochica painted and modeled pottery yields information about an earlier period in Peru. Mexican and Maya frescoes and codices sometimes portray contemporary life but the material is limited in quantity, and secular aspects often are dominated by religious symbolism.

PACCHAS

The rare and curious drinking instrument known as a paccha in Peru was identified by Joyce (1922) from an illustration and description published by Frézier (1717, Pl. 9). The paccha may be defined as a vessel with an outlet for drinking at the base. Liquid might issue through a tube or across a long tongue with open zigzag channels on the upper surface leading to a conical mouthpiece. Pacchas with short extensions probably were handled by the individual drinker. The longer ones evidently required the services of an attendant, for they may be over 2 feet in length and they are so heavy even when empty that they are hard to handle.

There are 3 principal types of pacchas: (1) those made of human skulls, (2) pottery specimens, and (3) wooden examples. The first is known only through historical description. The 2 other classes include variant forms which we shall discuss.

Skulls of important enemies were preserved as trophies from very early times in Peru. One of the carvings at Cerro Sechín in the Casma valley represents a pile of heads comparable to the Aztec *tzompantli*. Mummified human heads with a rope and toggle in a hole in the forehead have been found in Nazca graves (Tello 1943, Pl. 17, *D*; 1918, Lám. 3-7).

Atahuallpa, while a prisoner of the Spaniards, startled them by producing a human head with a gold vase sunk in the top and, extending from the mouth, a tube of silver through which he drank. Evidently this must be classed as a paccha. The Anonymous Conqueror (1929: 35) wrote:

> A few days before in a province which is called Gomachuco [Guamachuco] he [Atahuallpa] had killed many people and had made prisoner a brother of his who had made an oath to drink with the head [from the skull] of the same Atabalipa, and Atabalipa had drunk with his head because I saw it and all those who were with Hernando Pizarro and he saw the head with its skin and the dried flesh and hair and teeth closed holding a pipe of silver and on top there was attached a large golden cup, the same one from which Atabalipa used to drink when he remembered the battles that his brother had fought against him. And they used to put the chicha in this large cup and it used to come out of the mouth and the pipe with which he used to drink.

Pottery pacchas are pre-Spanish and of several types, but all have a tube extending from the base, usually horizontally or diagonally downward, in one case vertically downward. They all apparently are preconquest but not by any great margin of time.

Pottery pacchas may be defined as replicas in clay of complex combinations of different elements and materials, held together by pitch, glue, or lashings, comparable to the skull of Atahuallpa's brother combined with a cup of gold and a silver mouthpiece. It is a curious fact that, notwithstanding the preservation of normally perishable materials in the arid soil of the Peruvian coast, no prototypes of compound forms are on record, and their very

FIG. 67. Two wooden pacchas; length of *a*, 27 in.; of *b*, 25½ in.

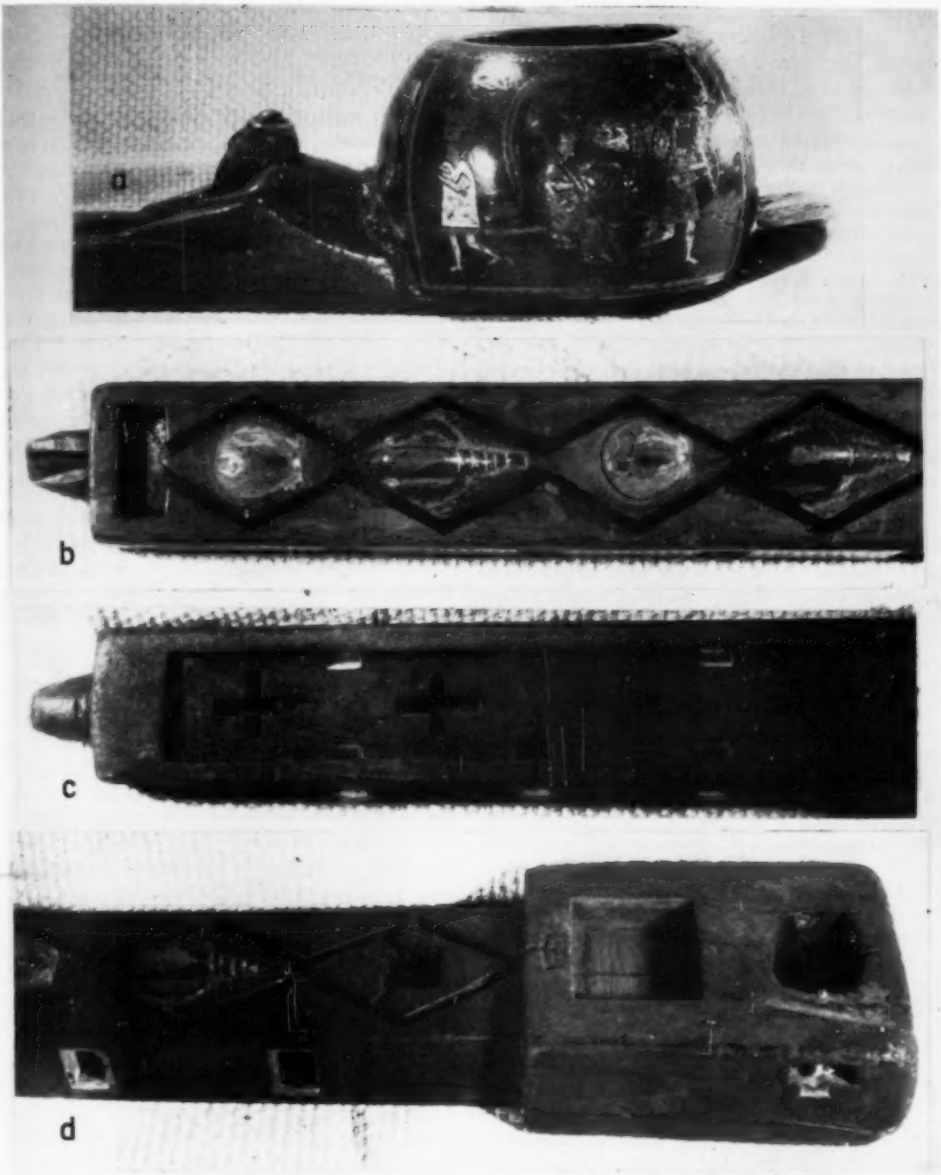

FIG. 68. Details of pacchas shown in Fig. 67.

existence can only be surmised from the copies in clay. The following discussion is based on 18 illustrated pottery pacchas of 9 different types. There are 3 groups of 3 specimens each, 2 groups of 2, and 5 unique pieces. We shall describe them in that order.

Figures 64 *e* and 66 *d* represent a very complex form. At the top is a typical Inca arybalus with the usual loop handles and projecting knob. To the base of this is luted a large curved tube which in turn is lashed, apparently with leather thongs, to a long tapering tube which slopes diagonally downward and terminates in a spout. At the upper end of the straight tube there is a solid ear of maize, probably cast from an actual specimen, which serves as a handle. Another example (Kroeber 1925, Pl. 68 *f*) has less curve in the upper tube and the long tube extends directly downward. The prototype of this strange object is by no means obvious. The pottery jar may have been attached to the curved tube with pitch in the fashion seen in Figure 68 *a*. Of what materials the 2 tubes were fashioned we cannot say. The curved tube evidently consists of one piece but the lashings indicate that the long tube was made of 2 or more sections. Joyce (1922: 147) suggests that it represented a stalk from which an ear of maize is sprouting, but this supposition is hardly consistent with its shape. The maize handle perhaps symbolizes the chicha with which the vessel was filled.

Another group of 3 specimens portrays a man seated below a pottery jar with a short basal spout so placed that it will pour liquid into his open mouth (Fig. 66 *a*, *b*; also Schmidt 1929: 207). The liquid runs through the man's body and then through the long tapering spout on which he is seated, finally emerging from a hole at the end. It seems probable that the whole assemblage represents a man drinking from a paccha.

The last group of 3 consists of a long tapering tube with a cup representing a llama head placed on the thicker end so that it faces the drinker (Joyce 1922, Pls. 11, 3; 13, *1*; also Schmidt 1929: 207, *top*). These recall the human head from which Atahuallpa used to drink.

Two pottery pacchas have small rounded cups set on a long *pacay* pod, modeled or cast in clay with a short spout at one end (d'Harcourt 1924, Pl. 49; Joyce 1922, Pl. 11, 4). Another type represents 2 or 3 jars stacked one above another (Fig. 66 *c*; Schmidt 1929: 261). Both have at the base the head of a long-eared animal holding a short tube in its open mouth.

Regarding the unique specimens, Wegner (n.d.) has published a curious black ware piece which shows a man holding a crawfish on a cone-shaped object which perhaps is a trap. Joyce (1922, Pl. 13, 2) illustrated a man kneeling on a cone-shaped container which he interpreted as a *caballito* or small reed raft. There is a cylindrical neck between the legs and a hole at the narrow end of the cone. Two examples are reproduced by Kelemen (1944, Pls. 155 *c*, 158 *d*). One shows 3 individuals standing on a rectangular mound with a projecting stairway which terminates in a tube. The other combines vegetal forms with a long tapering tube. Another unique piece published by Joyce (1922, Pl. 11, 5), represents a conch shell with a neck and loop handles on the side and a hole at the spiral end.

Other pottery pacchas doubtless have reached various museums. Some are mentioned in print under such terms as "curious conglomerations" but not under their native name. We have listed only illustrated examples. In spite of their variety in shape, there are certain unifying factors. When a provenience has been recorded, it invariably is on the north coast of Peru: Casma, Chepén, Chiclayo, Lambayeque, Trujillo. Eight of the listed specimens are of the common Chimu black ware. Four pieces, like our Figure 64 *e* incorporate vessels of Inca style, which implies that they were manufactured after the Inca regime had dominated the north coast (about 1470).

In regard to the origin of pottery pacchas, spouted vessels were produced in Peru from very early times, but usually the spouts are vertical or slope diagonally upward. Lateral spouts are seen on vessels in the styles of Recuay and Nievería, neither of which existed at a time or in a place to qualify as a precursor of the basal spout of the paccha.

We therefore must conclude that the paccha was invented by the Chimu and taken over by the Inca or vice versa. The first conclusion seems the more probable. All recorded preconquest pottery pacchas have come from the coastal Chimu region, none from the highland Inca center. Also, in later times, the Inca standardized certain major types in wood, but the multiple pottery forms found in the Chimu area suggest experimentation and invention. It is clear, however, that the Inca used this strange drinking device in the 1530's, as attested by the story of Atahuallpa we have quoted, and that they continued to manufacture them with steel tools after the conquest. Under Inca influence use of the paccha spread to the Araucanian peoples of Chile, as we shall show.

Wooden pacchas are rare. The writer has examined 2 in the Museo Arqueológico Nacional in Madrid, 2 in the British Museum, and 2 in the Peabody Museum of Harvard. Seler (1893, Taf. 4, 9) has published a none-too-clear photograph of another in the Museum für Völkerkunde in Berlin. All are adorned with the same type of designs and the same pigments seen on the keros, and all apparently were

carved with steel tools. The liquid flows through a hollow tube in the Berlin specimen and in one of the Madrid pieces. The other 5 have flat projecting tongues which terminate in a spout, and the liquid runs through open zigzag channels cut in the upper surface (Fig. 67, *a*, *b*). These channels are so narrow that only a very moderate flow can be obtained and a steady hand is needed to avoid spilling.

Two wooden paccha in the Peabody Museum of Harvard differ from each other not only in shape, but in the functioning of their hydraulic systems. One (Fig. 67 *a*) has a globular container for liquids which probably was hollowed out with a steel knife rather than a chisel, for there are long horizontal cuts rather than narrow vertical ones. This bowl seems to have been carved separately but the line of juncture with the tongue is concealed by pitch (Fig. 68 *a*).

There are 4 painted panels. On each side a man is represented seated on a litter with a standard in his hands. Above is an arched canopy with feline heads at the base. Two flanking figures are not litter bearers but hunters with bows and arrows. This scene portrays an official watching a hunt. Front and back panels may depict the quarry, for they each show a palm tree and pairs of birds and monkeys.

A projecting butt behind the bowl is too small to serve as a handle, but it can be used to steady the implement when pouring. In actual tests, we found it far from easy to maintain a steady flow to the end spout without spilling. Where the bowl and tongue meet there is a prone human torso with arms outstretched on either side of a rectangular basin (Fig. 68 *a*). This figure was carved from a separate piece of wood snugly fitted in place. Liquid emerges not from the mouth but from a hole in the chest. The tube slopes downward to the bottom of the bowl and the intake is nearly 2 inches lower than the outlet. On the upper surface of the tongue are 2 zigzag channels about ¼ inch wide and deep, leading to a second rectangular basin beyond which is a short conical spout pierced by a tube. The zigzags enclose 4 diamond-shaped blocks. The top of the tongue is adorned with painted flowers, the sides with birds and flowers.

A second and far more complex paccha appears in Figures 67 *b*, *b'*; 68 *b*, *c*, *d*. In this case the container is of kero shape with a hole in the base and a projecting rectangular tenon (Fig. 65 *b*, *b'*) which fits into a corresponding socket or mortise in the tongue (Fig. 68 *d*). The inner walls of the kero show the marks of a steel chisel (Fig. 65 *b'*) but otherwise there is no indication of European influence. Decoration consists of a painted band of alternating green shrimp and red scallops which encircle the base. At the top there are 6 textile-like patterns (Fig. 65 *b*) and a drinking scene (Fig. 67 *b'*). At the right side of this panel is a man of high rank seated on a stool, a privilege granted only to people of importance. Above his head is a canopy of feathers set on a staff. In his hands he holds by the tongue a paccha with a kero-shaped bowl like the specimen on which it is painted. On the opposite side of the panel there is a woman who holds a kero in her hands, apparently about to refill the paccha from the kero. This, so far as we know, is the only native painting of a paccha in actual use.

One of the specimens in the British Museum published by Joyce (1922, Pl. 10, 2, 2*a*) consists of a tongue with a rectangular mortise at one end like the Harvard specimen, indicating that the bowl, now lost, was separate from the rest of the specimen and "was affixed to it as the occasion might demand." There is no trace of pitch or any other substance for waterproofing the joint either on the British Museum or the Harvard specimens. The latter, however, when tested, leaked so badly that we could get little liquid down the channels. It therefore seems that either the bowls of these 2 pieces once had been permanently attached or that some temporary waterproofing such as clay had been used. We can see no functional advantage in a detachable bowl. It would not be possible to replace an empty with a full one without spilling.

The butt of the Harvard specimen on which the kero rests is a rectangular block wider and higher than the rest of the tongue (Fig. 68 *d*). Behind the socket for the kero is a second and much deeper basin. On the sides flanking this are 2 T-shaped niches. Small pegs had been driven diagonally upward from these to the rim of the basin. There is a third peg at the back. On the British Museum piece the basin is replaced by a rectangular opening cut through the tongue and there are pegs. Evidently something is missing from both.

When the Harvard paccha is assembled and the bowl filled with water, it runs through a hole in the base and a slot on the side of the tenon, then through a tube in the front wall of the butt which opens into 2 zigzag channels. These form 7 diamonds. The outer 6 have alternate red scallops and green shrimp cut in relief (Fig. 68 *b*). They are not insets but are carved from the same wood as the rest of the tongue.

The seventh diamond, next to the kero, has a square well in the center (Fig. 68 *d*). From the rim 2 short lateral channels lead to the zigzag channels. In the bottom of the well there is a tube running back under the kero socket to what we have called the basin, thus forming an inverted siphon as seen in Figure 69.

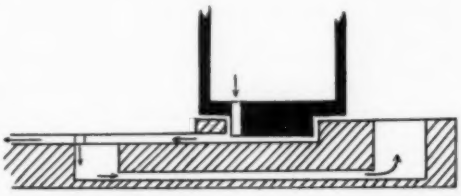

FIG. 69. Section of the butt of a paccha showing water channels and basins.

If pacchas in general may be regarded as mysterious instruments, this unique specimen with hidden interior plumbing makes them even more so. We tested it and it functioned. When water ran down the zigzags and the tongue was lifted slightly up, it entered the small lateral channels, filled the well and then the basin, the rim of which is higher than the well. How was the lower tube drilled? Was this a device for providing a sip to some forgotten Peruvian Ganymede?

The principle of the inverted siphon was known and used all over Peru to raise water to surprising heights. We have seen stone conduits near the tops of the fortress at Paramonga and the Temple of the Sun at Pachacamac. These are now dry, but between the ancient ruins and modern town of Pachacamac is an hacienda on a steep hill, at the top of which pre-Spanish plumbing still functions. These and many other instances might be cited where water was raised several hundred feet and no visable supply exists within miles.

The Harvard paccha has other unique features. On either side of the tongue are 7 rectangular niches (Fig. 67 *b*). Each has a narrow sunken border painted red. The interiors are alternately green and yellow. A slot has been cut through the floor of each niche which emerges in a long sunken panel on the base of the tongue. This is further adorned by 6 intaglio crosses (Fig. 68 *c*), each centered under one of the decorated diamonds above. We are not able to explain either the purpose or symbolism of these carvings on the top, sides and bottom of the tongue, beyond pointing out that the zigzag channels suggest a meandering stream while shrimp and scallops are aquatic creatures.

Regarding the function of pacchas in general, it is evident that such intricate instruments were not easy to manufacture and could not well have been devised for general use. Joyce (1922: 148) has pointed out that, according to the label, one of the Madrid specimens was designed for serving chicha to the dead. He also suggested that the basins and zigzag channels cut in rock in various parts of Peru "are really permanent Paccha consecrated to the use of the dead who were deposited in the neighborhood."

On the other hand, when Atahuallpa drank from his brother's skull, although the occasion might be solemn, he clearly was not making a libation to the dead but contributing to his own *joie de vivre*. The painted scene in Figure 67 *b'* carries no implication of a mortuary cult, merely solemn and ceremonial drinking.

The only European to see, picture, and describe the use of a wooden paccha was Frézier (1717: 65-6, Pl. 9), who reported them not in Peru but at Talcahuano in Chile. The first English edition, which we quote, was published a year after the original French edition, but reprinted the original French plates in which the name is given as *Paquecha ou tasse a bec*. Frézier's text is as follows:

The Women (of Talcahuano) gave them *Chicha* to drink, being a Sort of Beer, of which more hereafter, with a Wooden Instrument about two Foot and a half long, consisting of a Handle-Cup at one End and a long Beak at the other, with a winding Channel cut along it, to the end the Liquor may run out gently into the Mouth through a little Hole bored into the Bottom of the Cup or Dish at the Head of the Channel. With this Instrument they make themselves as drunk as Beasts, singing without intermission, and all of them together. . . .

In comment, we should state that Talcahuano is south of the River Maule, traditional Inca boundary, and therefore in Mapuche (Araucanian) territory. As pointed out by Latcham (1928: 195), however, Inca expeditions made incursions beyond the territory they definitely controlled and their influence on painted pottery and textile designs can be detected far to the south. Inca designs in fact extended to the southern limit of aboriginal painted pottery and continued into the Colonial period, as attested by graves we opened at Fundo Cuquimo near Osorno which contained aboriginal pottery as well as Spanish tiles and traces of iron. Inca motifs still persist in Mapuche weaving.

Under these circumstances, it is not surprising that the paccha, a Peruvian drinking device which might well appeal to their temperament, should have been adopted and have survived until the 18th century at Talcahuano in Araucanian territory.

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PEABODY MUSEUM
Cambridge, Mass.
September, 1954

THE OLD COPPER COMPLEX: AN ARCHAIC MANIFESTATION IN WISCONSIN

WARREN L. WITTRY AND ROBERT E. RITZENTHALER

IT SEEMS appropriate, particularly in the light of the recent radiocarbon dates for an Old Copper site, that the accumulated information about the Old Copper complex be summarized for the use of those interested in the prehistory of the Northeast. While some of the data presented here have been previously published in greater descriptive detail, they are briefly reviewed because they represent the factual basis for the definition of the complex as a local cultural variant in the Archaic period. The radiocarbon dates and certain new data add materially to the basis for the interpretation of the remains of these early inhabitants of Wisconsin. We use the term "Archaic" to refer to a time period rather than a cultural assemblage, although we shall discuss the cultural traits that appear to fit into this time period in the locale under discussion.

The distinctive utilitarian copper implements of the Great Lakes area, long known to have their center of distribution in Wisconsin, were first set apart as an industry by McKern in 1942. He suggested an early time horizon for them based on their characteristic deep acid erosion, their lack of association with any of the known local cultural manifestations, and the presence of some of the types in early horizons in the Northeast. Although there had been earlier, poorly documented discoveries of these copper types in caches or as burial associations, the vast majority of them occurred as surface finds and very little was known of their cultural context until the discovery and excavation of the Osceola site in 1945. The existing descriptions of the Old Copper complex (industry or culture) are based largely on that site and museum collections (Martin, Quimby, and Collier 1947; Miles 1951; Bennett 1952; Quimby 1952).

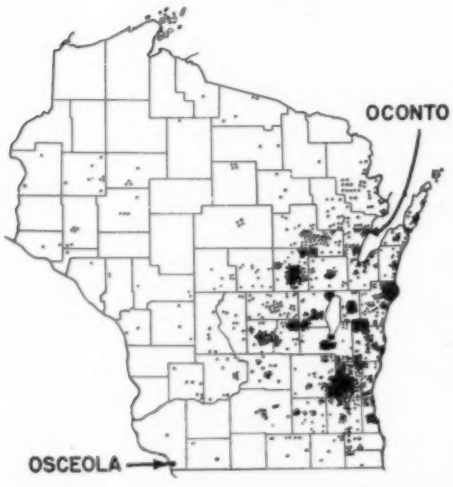

FIG. 70. Distribution of copper artifacts of Old Copper types in Wisconsin and locations of Osceola and Oconto sites.

THE OSCEOLA SITE

The site (Ritzenthaler 1946) was exposed by the action of the waters of the Mississippi River in the NW¼, Sec. 11, T2N, R3W, Grant County, Wisconsin. Previously, the cemetery had been located on the bank of the Grant River, but the building of a dam at Dubuque raised the water level and widened the Mississippi at this point. A large section of the cemetery had apparently been eroded by the river so that it is not possible to determine the total number of individuals originally interred. An estimate of 500 is based on the concentration of burials in the excavated area and a guess as to the size of the area that had been destroyed.

Burials. The burials were found in the lower half of a 5-foot layer of black sand overlying a culturally sterile beach of white sand. An area about 70 feet long and 20 feet wide remained of this deposit of black sand at the time of excavation. The dead were disposed by bundle reburial in either single or multiple interments or by partial cremation of the bones. There was no evidence of the burning of articulated bodies. In 3 instances, a layer of small stones had been placed directly over a burial. Due to the nature of the black sand outlines of graves that might have been dug were not discernible. Certainly no pits were dug down into the old beach. The conclusion reached in the field was that the burials were made over a period of time rather than as a single mass burial. The skeletal remains were very poorly preserved. In some burials even the teeth were

in the last stages of decay. Occasionally, only fragments of bones preserved by contact with copper were all that remained of a burial. At one end of the pit an intrusive flexed burial was encountered. This was well preserved compared to the condition of the bundle reburials.

Artifacts (Fig. 71). In addition to artifacts of Old Copper types, both chipped- and ground-stone implements were found with burials. More often than not, however, copper and stone artifacts were not directly associated with a burial despite their placement in the burial layer. Possibly some or all of these artifacts were originally with a burial, all traces of which had since disappeared. In distribution, the artifacts seemed to be highly concentrated in the center of the area, fading out rapidly toward its edges. The burials, too, tended to thin out toward the edges of the area, but not as rapidly as the artifacts.

Three categories of chipped stone were represented, each having an extremely limited variation in form. Drills occurred in a single form, a thin T-shaped outline. End scrapers having side notches and a straight base may be modified projectile points. The characteristic type of projectile point has a blade with roughly parallel sides, side notches, and a straight or (more frequently) a concave base.

Three categories can also be listed for the ground-stone articles. Hammerstones and small grinding stones with flat or slightly concave surfaces resulting from use were found during the excavations by the Milwaukee Public Museum. The third category, consisting of 2 ground and polished bannerstones, was not described in the report on the site. They are reported to have been found, one at, and one near, the burial site by amateur archaeologists. Edwin Goke of Platteville, Wisconsin, has a winged bannerstone and several copper artifacts from the burial layer. Frank Achen of Madison, has a bannerstone of a prismoidal form which he found 75 feet south of the area where excavations were conducted.

The types of copper implements include awls (most common), socketed spuds, socketed projectile points, a knife, and ornamental forms. The few ornaments have been classified as a finger ring, a small clasp, a bracelet (?), and an unidentified hooked object. Several rolled sheet-copper beads were found separately in the burial layer.

Miscellaneous items in the inventory include galena cubes, clay wads, and small lumps of red ocher. None of these show any indication of having been worked and none were found with burials. Fragments of grit-tempered, cord-marked Woodland pottery were dispersed in the sand over and, to a much lesser extent, in the burial layer. Available data point to the fact that the few sherds found in the burial layer are a result of subsequent disturbance, and should not be considered as part of the Old Copper complex.

THE OCONTO SITE

Like Osceola, this site (Ritzenthaler and Wittry 1952) is primarily a cemetery, although evidence for occupation existed in scattered post holes and a small number of unassociated artifacts. It is located on a sand and gravel ridge about 150 yards from the present course of the Oconto River about 3 miles above its entry into Green Bay on Part 4, Gov. Lot 8, Sec. 24, T28N, R21E, Oconto County, Wisconsin. Also like Osceola, this cemetery had suffered the removal of a large portion of its area but in this case it was through the operations of a commercial gravel company during the 1920's. Charcoal was found in some of the post holes indicating that they were not caused by exploratory tests of the gravel company. The post holes were rather evenly spaced about 1.5 feet apart and had an average diameter of 0.8 foot. From 5 to 8 holes were found in curved alignments; in one area there was a suggestion of an oval structure 13 feet in width.

There were 3 zones in the natural stratigraphy of the site. The humus layer was 0.5 foot thick, overlying a 1.5-foot layer of yellow sand which was underlain by gravel. Work at the site was conducted in 2 areas. Area 1, the main area, lay at the eastern edge of the pit left by the gravel company. Area 2 was a small island left in the center of the pit where the humus layer had been heaped up over the original surface by the gravel workers. Area 2 was about 80 feet from Area 1. If there had been burials in between the 2 areas as concentrated as they were in the excavated portions of the site, there must have been several hundred originally present.

Burials. The outstanding feature of the Oconto site is the great diversity in burial types, though all burials were made in pits or graves extending down into the gravel to an average

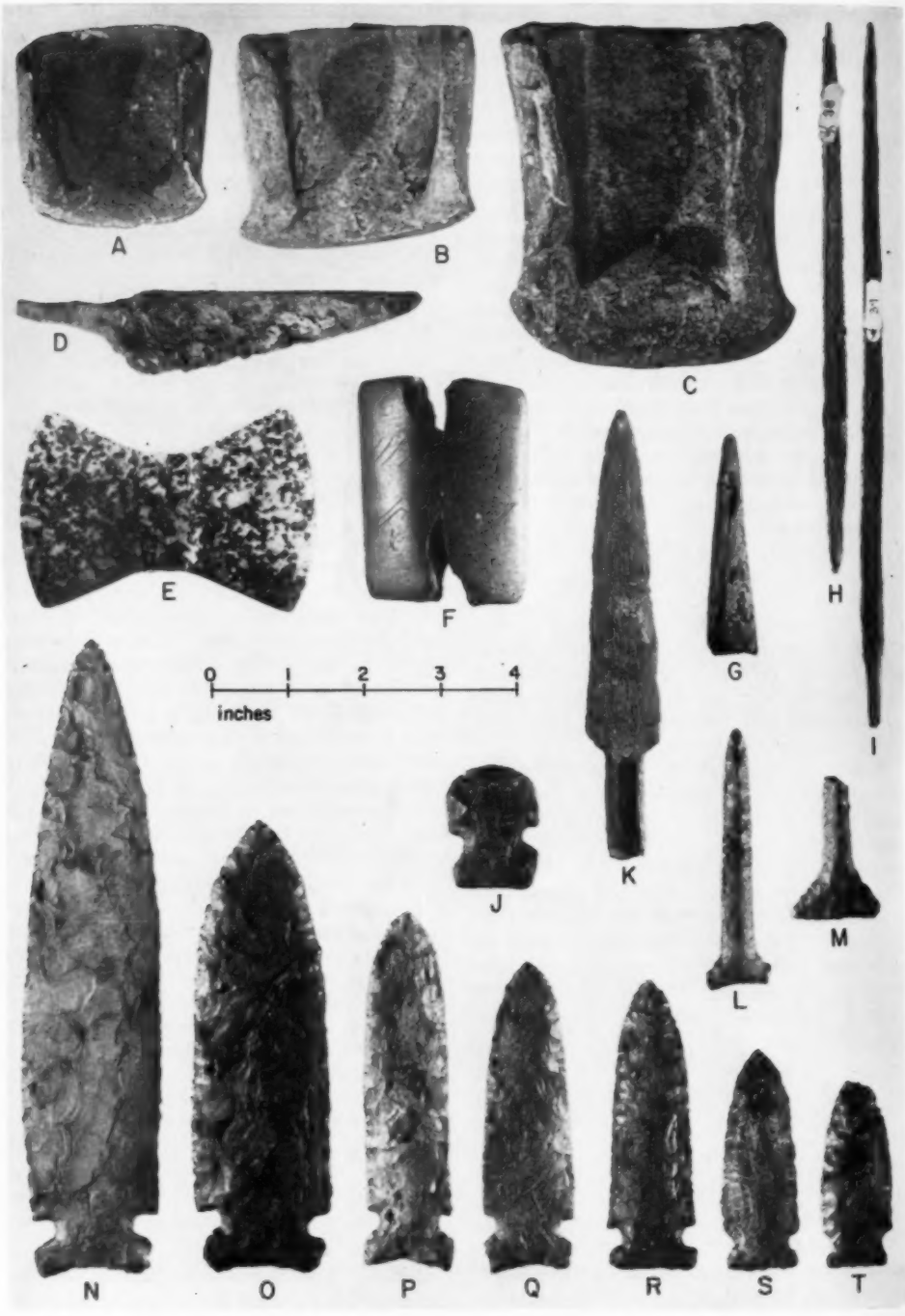

FIG. 71. Osceola site artifacts. *A-C*, socketed copper spuds; *D*, copper knife; *E-F*, bannerstones; *G*, conical copper projectile point; *H-I*, copper awls; *J*, chert scraper; *K*, socketed copper projectile point; *L-M*, chert drills; *N-T*, chert projectile points. ½ natural size.

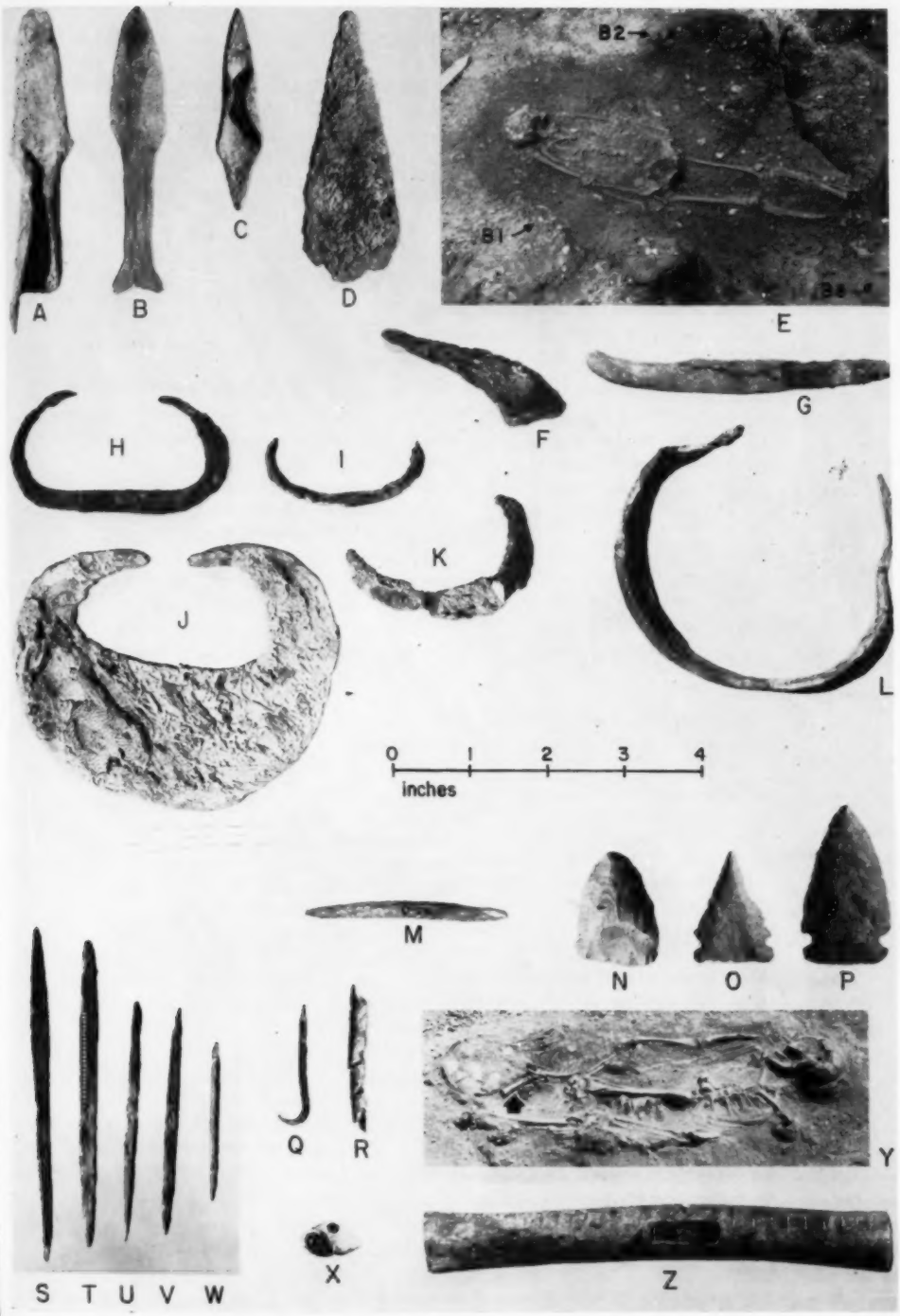

FIG. 72. Oconto site artifacts and burials. *A-D*, copper projectile points; *E*, Area 2, Feature 1, Burials 1, 2, and 3; *F-G*, copper spatulas; *H-K*, copper crescents; *L*, copper bracelet; *M*, bone awl or gorge; *N*, chert scraper; *O-P*, chert projectile points; *Q*, copper fishhook; *R*, sheet copper spiral; *S-W*, copper awls; *X*, snail shell bead; *Y*, Feature 5 showing bone whistle and hematite lumps at base of child's skull; *Z*, whistle made from left humerus of trumpeter swan. ½ natural size.

TABLE 14. BURIALS AT THE OCONTO SITE

Feature Number	Description	Associations	Illustration (Fig. 72)
SINGLE INTERMENTS:			
1	Infant, partially flexed on right side, head south	Copper crescent, fiber cord and birchbark preserved by contact	K
2	Adult, bundle reburial		
4	Adult female, extended on back, with lower legs folded underneath upper legs, head south, face east	Turtle and duck bones near skull	
9	Adult, fully flexed on left side, head west, face north		
10	Adult male, extended on back, head north, face west		
17	Adult, partially flexed on left side, head north	Chert scraper next to arm	N
19	Child, extended on back, head southwest		
21	(?), extended, head north		
22	Adult female, bundle reburial		
Area 2, 1	Burial 1: adult male, extended on back, head west, face north; grave intruded into Burial 2	Copper spatula near left knee, fiber cord preserved by contact	E, G
Area 2, 1	Burial 3: adult, prone position, arms flexed, head east, face north, lower torso and legs missing due to intrusion by cremation pit of Burial 2		
Area 2, 4	Remains of skull, indeterminate		
Area 2, 5	Remains of skull, indeterminate		
MULTIPLE INTERMENTS:			
3 a	Young adult male, bundle reburial, in pit over *b*		
b	Male, partially flexed on left side, head south, face west, over *c*	Chert point 5 inches from knee	P
c	Adult female, extended in prone position, head south, face west, hands under pelvis		
5 a	Adult female, extended on back with right leg flexed over torso, left lower leg folded under upper leg, head south, face east; so flexed in pit to make room for *b*		
b	Child, extended, head north, face east	Bone whistle and 2 hematite lumps at base of skull	Y, Z
6 a	Adult, bundle reburial, over *b*	Copper fishhook	Q
b	Adult, fully flexed on left side, head south, face east		
7 a	Child; disarticulated bones in southwest corner of pit		
b, c, d	Disarticulated bones of 3 adults in pit over *e* and *f*		
e	Adult female, partially flexed on left side, head south, face west	2 antler tips between head of *f* and feet of *e*	M, O
f	Infant, extended, head south, face east	Fish bone awl and chert point near face	
13 a, b	Remains of 2 individuals; probably bundle reburial		
14 a	Cremation, over *b*		
b	Bundle reburial		
15 a	Adult male, fully flexed on right side, head north, face west		
b	Represented only by extra pelvis and phalanges in pit over *a*		
16 a, b, c	2 adults and 1 infant, bundle reburial		

depth of 2.5 feet below the surface. Pit outlines were not discernible in the yellow sand so the levels of their origins could not be determined. Outlines in the gravel were round for the cremation pits and elliptical or rectanguloid for the graves. The primary burials showed no consistent orientation for the head or face though most of the graves had roughly the same alignment as the long axis of the gravel ridge, a northeast-southwest direction. Graves and cremation pits were separated from each other by distances of 1 to 5 feet, and in spite of this close placement did not have an arrangement in rows. There were only 2 instances in which a grave intruded into another grave. This occurred in one location where the first burial had been placed in a pit in a prone position. Subsequently, a cremation pit was dug partly intruding into the earlier burial. On top of the cremation an extended skeleton was placed, the grave for it intruding into the cremation pit (Fig. 72 *E*). This evidence, together with that provided by the multiple burials, counters any interpretation that would account for the variation in burial types through temporal changes in the burial pattern. Though all of the skulls were crushed, preservation of the skeletal remains was fair, probably a result of the drainage conditions.

Cremation pits ranged in diameter from 2 to 5 feet. Several of the 8 pits excavated contained the partially burned bones of more than one individual but the exact number could not be counted. Evidence of fire on the bottoms and sides of the pits, blackened stones, and the presence of charcoal show that the cremation took place in the pits. Skull fragments, single teeth, split bones, and the scattering of bones in the pits indicate that the bodies were either dismembered or had been given a tree or scaffold burial before cremation. Bones of the hands and feet were occasionally found in their natural relationship. Small deposits of partially burned human bones and ashes probably represent the remains of only one individual and may be dumps of remains that were burned elsewhere. These were found primarily in the sand and did not extend down into the gravel.

The graves contained primary and secondary burials in both single and multiple interments. Almost the complete range of variation in burial types occurred in the graves. Extended burials were the most frequent (9), 7 being supine and 2 prone. There were 7 partially flexed, 4 fully flexed, and 5 in indeterminate positions. Twelve bundle reburials were found. Table 14 summarizes the burials found by the field party. Two articulated (extended?) burials and a cremation pit had been dug up by local residents prior to the excavations by the joint field party from the State Historical Society and the Milwaukee Public Museum. Since there had been no previous record of the site, these earlier discoveries led to the acquisition of the property by the Oconto County Historical Society and the excavations under discussion here. The designation of sex in the table is based on field observations and is therefore tentative.

Artifacts (Fig. 72). In contrast to the Osceola site, the majority of these specimens occurred as burial associations. In addition to a considerable number of chert flakes, the only artifacts not found with burials were 4 chipped-stone projectile points and 10 copper awls. These, for the most part, were encountered near the top of the yellow sand layer. Artifacts were found with all of the forms of burial including cremations, but with only about ⅓ of the total number. More of them were found with infants and children than with adults. A few of the artifacts described here were found with burials by local residents when the site was first discovered.

Projectile points and one triangular object, possibly a scraper, are the only tools of chipped stone. Two points associated with burials somewhat resemble the Osceola points, one having an obviously reworked blade. The points found in the humus or disturbed areas consist of 2 corner-notched points and 2 contracting-stem points.

The most interesting find was a bone whistle made from the left humerus of a swan (*Cygnus* sp.), erroneously reported by Ritzenthaler and Wittry (1952) as a deer tibia. The present identification was made by Robert Blake of the Chicago Natural History Museum and was corroborated by Alexander Wetmore who tentatively further identified it as a trumpeter swan. The whistle is an unusual type, having a large rectangular opening near the center and 2 small round holes oppositely placed in grooves on the sides under the larger opening. The 3 rows of short parallel incised lines extending over the length of the whistle resemble

the type of ornamentation sometimes found on copper implements (Winn 1942).

The mandible of a fish had been modified into a double-pointed awl or gorge. Two antler tines having worked tips occurred as burial associations and one charred antler tip was found in a concentration of charcoal in the sand layer.

A number of perforated pond-snail shells (*Campeloma decisum*) were found around the wrist of one of the extended burials. These were probably part of a bracelet, the stringing evidently being through the artificial perforation and the natural aperture. Two fragments, apparently unworked, of the shoulder of a marine shell (*Fulgur perversus*) were found in a grave. Fragments of a mussel shell (*Unio ellipsis*) were also found as a burial association.

Of the copper artifacts, awls having a square or rectangular cross section were the most common type. Both socketed and flat-tang projectile points were present. A triangular object found in a cremation pit may have been a small celt or the blade of a point. A fishhook, a copper rivet, 2 spatulas, and 4 crescents complete the list of utilitarian forms. It may be, however, that one or two of the crescents had a more ornamental than utilitarian usage to judge by their fragility and form. An impression of animal fur is preserved in the coating of copper salts on the largest crescent. Two fragments of cord were preserved by contact with copper implements. They are of vegetable fiber, formed of 2 strands twisted in a counter-clockwise direction. Copper ornaments include a bracelet, a spirally wound coil, and several small clasps of the same type found at Osceola.

No pottery was found in any of the work at the site, and in view of the early radiocarbon dates the site can be placed, with little doubt, in the preceramic period.

Radiocarbon dates. Two dates for the Oconto site were obtained from samples of charred wood found in cremation pits (Libby, personal communication). Sample C836 gave a result of 5600 ± 400 years. This sample was collected from Burial 2 of Feature 1, a cremation in Area 2 (Fig. 72 *E*). This pit is the one which intruded into the grave of a prone burial and which had an extended burial intrusive into it. The pit, before being disturbed by the digging of the grave for the extended burial, was about 3.5 feet in diameter and extended down into the gravel 2.8 feet below the surface. In addition to charred bones probably representing more than one individual, 2 copper spatulas were discovered in it. The second date resulted from a test of charcoal from 2 features mixed together to make an adequate sample. The mixture consisted of 12 grams (C837) from Feature 3 in Area 2 and 8 grams (C839) from Feature 11 in Area 1 (Square 25L1). Feature 3 was a cremation pit of the usual type found at the site and had a diameter of 5.5 feet. It contained no artifacts. Feature 11, located 107 feet from Feature 3 on a bearing of 51°30′ east of magnetic north, is recorded as a concentration of charcoal and contained a charred antler tip. The date for the mixed sample is 7510 ± 340 years.*

Comparison of the Two Old Copper Cemeteries

There are few specific traits indicative of a close relationship between the Osceola and Oconto sites. The main connection lies in the occurrence of Old Copper implements at both of the sites and certain similarities in the burial patterns. Whereas bundle reburial and cremation were the only methods of burial at the Osceola site, about half of the burials at Oconto were of these types and the remainder were primary interments. The Oconto site lies within the area of concentrated distribution of surface finds of the Old Copper implements in Wisconsin, while the Osceola site is situated outside this area (Fig. 70). Although the possibility exists that the differences may be the result of the removal of large areas of both sites prior to excavation and hence an incomplete sampling of them, they might also have been caused by geographical or temporal factors. Radiocarbon material was not obtained at Osceola, and there is no good evidence to indicate which is the older site. The skeletal material at Oconto was in a far better state of preservation, but this can be accounted for on the basis of much better drainage conditions. On the basis of distribution, however, with Oconto within the area of concentration, it is possible that Osceola represents a later outpost. If this be true, the rolled-socket copper projectile point found at Oconto is an earlier type than the angular-socketed, ridged back

* As reported by W. F. Libby in *Science* 120:740 (1954), the dates are 5600 ± 600 years for sample C-836 and 7510 ± 600 years for the mixed samples C-837 and C-839. In Libby's report C-837 should read Feature 3, Area 2.

type found at Osceola. The latter is the most common form, while the former ranks second among all the forms classified as projectile points. Furthermore, since we have drawn a parallel between the decoration of the whistle and of certain copper types, it should be pointed out that the rolled-socket type is frequently decorated and the angular-socketed, ridged-back type is ornamented only extremely rarely (Winn 1942).

THE OLD COPPER PHYSICAL TYPE

One male skull from the Osceola site and 1 male and 4 female skulls from the Oconto site were submitted to Georg K. Neumann for analysis. His report (personal communication, 1954), states that in the light of the radiocarbon dates this is the most ancient cranial material that can be demonstrated to represent a variety of American Indian which can be linked to the Black Sand focus people of Illinois, the later Hopewellians of the Ohio and Illinois valleys, and the historic Delaware Indians. The 2 males tended to be of good size and generally robust while the females were rather small and fragile. The 6 skulls can be characterized as long headed with cranial indices of 74.86 for the Osceola male, 76.76 for the Oconto male, and an average of 72.48 for the Oconto females. All 6 are moderately high vaulted, relatively narrow faced, and relatively narrow nosed. Morphologically the skulls exhibit great homogeneity and can be described as possessing well developed supraorbital ridges, somewhat retreating foreheads, some sagittal cresting, more than moderate lambdoid flattening, and a bun-shaped occiput. The cheek bones are not prominent and rather small in the females, the orbits tend to be square to oblong, and the chins are of the narrow but bilateral type. Without doubt the group can be assigned to the Otamid variety of Paleo-Amerinds (Neumann 1952).

THE OLD COPPER COMPLEX

The discrepancy of 1910 years between the 2 radiocarbon dates for the Oconto site is difficult to interpret. Apparently, there were no unusual laboratory conditions that might account for it and the same collecting technic, using metal containers, was used for all the samples from the site. We doubt that the cemetery was used over a period as long as suggested by the dates. There were too few graves with artifacts in association and such a limited range of artifact types represented that no chronological distinctions could be made. There is a possibility that the one sample was contaminated by natural conditions, such as rootlets, while still in the ground. If this were the case, the older date would be the more reliable. Of the several implications this early dating has for the archaeology of the area, one is that man must have entered Wisconsin soon after the retreat of the Mankato ice. The typologically early fluted points found in Wisconsin (Byers 1942; Ritzenthaler and Scholz 1951) possibly represent an occupation earlier than that of the Old Copper people. Unfluted points of a lanceolate shape with a straight or concave base, and with or without basal grinding, and gravers have been found as surface finds at a number of locations in southern Wisconsin. Four such points and 2 gravers were found at one site where excavations were conducted (Baerreis 1953). The similarities of these points to Starved Rock Lanceolate led Baerreis to regard them as being pre-Old Copper and in the Early Archaic period.

Little can be said about the specific origins of the Old Copper complex. In the past, some archaeologists working in the Northeast have postulated origins for certain of the copper and ground slate types of the Northeast with the Old Dorset culture. Different approaches to the problem showed that this north to south diffusion was unlikely (Ritchie 1951; Hoffman 1952). In view of Hoffman's suggestions in regard to the radiocarbon dating of the Wisconsin III glaciation and the early cultures of the Northeast, the traits in question should be regarded as being earlier in the Great Lakes area. Even before the dates were known, and as suggested by Ritchie's argument, the case was not very strong for the Old Dorset origin. The radiocarbon dates for the Oconto site tend to confirm these conclusions and indicate that if any diffusion of these traits took place, it was northward. We postulate that the origin of the Old Copper complex occurred when an early hunting and gathering group living in the Wisconsin area began to utilize native copper for the production of the distinctive utilitarian types of that area. At first, the nuggets in the glacial drift provided a handy source; later, copper was quarried from the trap rocks of Isle Royale and the Keweenaw Peninsula.

In one sense, the Old Copper complex might be considered as only the group of heavy utilitarian copper artifacts that are demonstrated to have a cultural association through their similarities in typological make-up, their common area of distribution, and their repeated association in caches and in graves (Wittry 1951). We feel, however, that the definition should be expanded to include all of the culture (in the archaeological sense) of the people who are known to have first used these copper types. This group of people is known primarily through thousands of surface finds and by the excavation of 2 of their cemeteries. While this information represents only segments of their life, it appears that these types of remains are the most significant left in the archaeological record. Future researches will, of course, fill in more completely the picture as it now stands.

The excavation of the 2 cemeteries and an analysis of earlier discoveries have provided an archaeological context for the Wisconsin coppers. Still, some of the interpretation rests on information resulting from comparisons with other materials. In pointing out affiliations indicated by the artifacts and burial customs of the Old Copper complex we will not repeat those already mentioned in the works cited on the first page of this article.

Specific trait correspondences are expressed in 2 of the traits recently added to the complex. The bone whistle from the Oconto site bears a close resemblance to instruments of the same peculiar type from Kentucky shell middens (Webb 1946: 304) and Oklahoma (Bell and Baerreis 1951, Pl. 3). One of the Kentucky whistles, from the Carlson Annis mound, was found with a burial, at the base of the skull, just as the Oconto specimen had been placed, (comoare Fig. 72 Y with Webb 1950. Fig. 5 *B*). The Annis mound and Indian Knoll, the provenience of another specimen, have radiocarbon dates ranging from about 4000 to 7000 years while the Oklahoma whistle is of the Fourche Maline focus, an Archaic complex which persisted through pottery horizons (Bell 1953). Before the Osceola bannerstones came to light, Titterington (1950) and Bennett (1952) had drawn attention to the similarity of the artifacts from the Hemphill mound in Brown County, Illinois, and those of the Osceola site. The Osceola bannerstones are almost exact duplicates of the two found at Hemphill in 1933 (Knoblock 1939: 201-10).

The scattered occurrence of Old Copper implements in some of the cultures of the Great Lakes area is, in many instances, the result of trade, but a few cultures, particularly those having a number of traits in common with the complex, may have been historically related. The finds of Old Copper implements in Ontario (Kidd 1952; Popham and Emerson 1954) are evidence for an extension of the complex into that area. Comparisons of the burial complex of the Oconto site reveals close parallels in the burials of the Brewerton and Frontenac foci of the New York Archaic (Ritchie 1944: 379, 385). Cremations are lacking in the Lamoka focus (Ritchie 1944: 394) and also in the Kentucky shell middens, but do occur in the lower levels of the Lauderdale focus (Webb and DeJarnette 1942: 113, 315). On the whole, the Archaic burial complexes of the northern areas of Wisconsin and New York seem to be more closely related to each other than to those of the Southeastern Archaic. There are, however, differences in physical type between these early populations.

The Old Copper complex must have existed over a considerable length of time as suggested by the vast number and diversity of forms of the copper implements included in the complex. The present evidence indicates that the 2 most common types of copper projectile point have temporal significance. It should be pointed out that aside from flat axes and awls, none of the Old Copper types of copper implements have been found in artificial mounds in Wisconsin. A few of the other types, however, have been found in mounds in Illinois and Minnesota (Cole and Deul 1937: 110; Winchell 1911: 370-1, 378).

A number of traits of the Old Copper complex survive into later periods. From the Reigh site near Oshkosh, Wisconsin, a burial complex very similar to that of the Oconto site is reported (Baerreis, Daifuku, and Lundsted 1954). Correspondences in artifacts include 3 copper projectile points of the type shown in Figure 72 *C*, 3 unperforated bone tubes made from trumpeter swan humeri and incised in the same manner as the Oconto whistle, and lumps of hematite. These lumps were associated with 2 of the bone tubes in one of the burials just as they were at Oconto, but in this case they were placed in front of the skull. There is a close similarity between the chipped-stone projectile points from the Oconto and Reigh

sites. They are side notched like the Osceola points but the sides of the blade are more tapering. The survival of some traits of the Old Copper complex into later periods makes it difficult to establish a point in time where the complex is no longer identifiable as such. This most certainly occurred before the building of burial mounds in Wisconsin. The problem is somewhat clarified when we examine certain discoveries made in the state over the past century. Included here are a number of burials found in the gravel or sand knolls or ridges in eastern Wisconsin. It may or may not be fortuitous that the area where these gravel-pit burials appear corresponds to the area of concentrated distribution of the Old Copper type implements (see map).

These burials (Brown 1924; Rueping 1944) ranged from individual interments to whole graveyards and were obviously made by several distinct cultural groups, but the majority of them are apparently more or less related to the Old Copper complex. The discoveries were made by workmen and are not well documented but the preservation of associated artifacts in private or museum collections frequently provides a supplement to the meager written accounts. Almost all of the forms of burial present at the Oconto site are represented in these finds. Along with copper implements, several traits are outstanding among the associated artifacts, including birdstones, large "ceremonial" flint blades, the use of red ocher, columnella shell beads, and sandal-sole shell gorgets. Few of these traits are known from Wisconsin mounds and most of them would generally be classified as belonging to the Early Woodland period. The copper implements most frequently found with them consist of axes, awls, heavy spherical beads, and, rarely, projectile points.

What, in all probability, is shown in these gravel-pit burials and at the Reigh site is the dwindling use of copper by later groups using Old Copper burial customs and at the same time the introduction of new artifact types. Some of these new traits such as the birdstone (Brown 1909) and sandal-sole shell gorget (Baerreis, Daifuku, and Lundsted 1954) may indicate Glacial Kame cultural influences coming in from an easterly direction and acting on the surviving Old Copper groups in eastern Wisconsin. What happened in western Wisconsin during this general period is somewhat conjectural. It may be that the burial pit at the Osceola site reflects a diffusion of this idea along the Upper Mississippi valley. With the disappearance of the characteristic copper artifact types, the Old Copper complex loses its specific identity while the burial practices survive.

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A FLINT SITE IN NORTHERNMOST MANITOBA

J. L. GIDDINGS, JR.

THE CHURCHILL area of Manitoba is a meeting place of Eskimos and Chipewyans. It is also the boundary of the northern forest and the barren grounds. My field trip in the summer of 1953 to this part of the western margin of Hudson Bay had to do with both of these facts, for I intended to collect samples of timberline spruce for treering dating, and I hoped to find flint sites comparable to those of northern Alaska. The archaeological site that did turn up on the North Knife River was gratifying beyond expectations, because its flints fall into a very precise relationship with artifacts of early Alaskan and early Greenland sites.

Upon first reaching Churchill by rail on the ninth of July, I inquired of several people as to their knowledge of arrowheads or other flints. Two or three reports of flint finds pointed either to remote places in the interior or to Dorset-culture sites in the northern part of Hudson Bay. On the evening before I was to leave for Eskimo Point and the Padlimiut country, I met Irwin H. Smith and his wife, who showed me a handful of small flints that had been brought to them the year before by an Indian. The remarkable thing about this collection was that it included both burins and side blades, neither of which was a usual part of either Dorset or later culture in the eastern Arctic. We were unable to find the Indian, however, and for the next 3 weeks of travel to the north I grew more and more impatient to learn about the site at which burins were to be found.

Maguse River, Northwest Territories. The intervening travel has archaeological interest of a different kind. I secured passage with the Reverend Gleason Ledyard to the Maguse River Mission, a few miles north of Eskimo Point, in the Northwest Territories. From there, with 4 Padlimiut men who spoke no English, I made a canoe trip about 60 miles inland, along the course of the Maguse River, to the head of a wide section of the river known as Maguse Lake. Along this route we saw no trees or driftwood, although a tongue of spruce reaches from the southwest into the extreme headwaters of the Maguse. We used heather for fuel, making only the quick fires that suffice the Padlimiut for their limited boiling and roasting. Along the shores of the river, and on the northeastern shore of the lake, I examined a number of sites of camps or habitations, some of which appeared to be quite old. Since I was in search of flint sites, however, and found flinty material on the ground at only one place, I made no attempt to excavate in this general region that falls within the traditional range of Caribou Eskimos.

Recent rings of stone like those still marking the site of an Eskimo tent were to be found at nearly every stopping place. My companions indicated that these were commonplace, but they showed a certain awe at stone remains of another kind, and I later learned that they did not consider these to be the leavings of their own people. The following are brief descriptions of 2 sites of this kind, and of 2 others that my companions did not recognize as signs of early human activity.

Site 1 (see map, Fig. 73). About 8 miles above the Maguse Mission at a point of branching of the river just below difficult rapids is a great wall of rocks piled up by ice action. Behind this dam, which seems to be slowly erasing the site, were about 10 circular or slightly angular enclosures, 10 to 15 feet in diameter, of large stones set upon end (Fig. 74). They were obviously man-made, apparently the bases of habitations of some kind. Many of the stones that formed parts of these walls were of such a size that they could have been moved only by the concerted effort of a number of people. The stones were covered with lichens, and the sod within the circles looked precisely like that outside, indicating neither fertilizing nor retarding effects for a long time.

Site 2. An ancient terrace forms a barrier across the Maguse some 20 miles from the mouth of the river. Here is the impassable "Bloody Falls" where a massacre is supposed to have taken place at some forgotten time. People moving up or down the river by water are obliged to portage here, and the place is reported to be a regular caribou crossing. The high banks on both sides, especially near the highest elevation (some 50 feet) of the terrace, are covered with stone monuments of one kind or another. Recent tent rings are less common than the circular walls or the remnants of partly

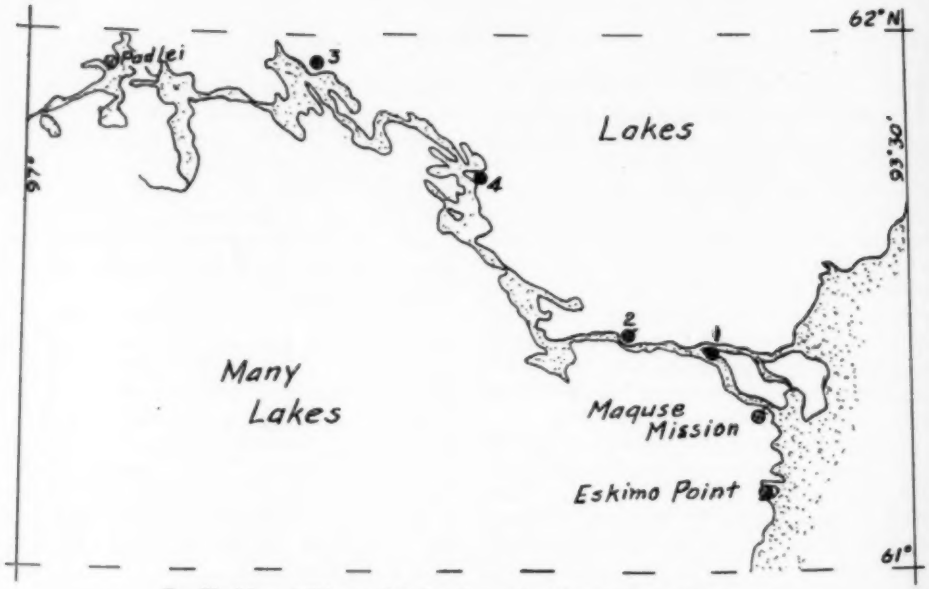

FIG. 73. Map of "Maguse Lake" and mouth of Maguse River, Northwest Territories, showing sites described in the text.

FIG. 74. Stone ruins described for Maguse River Site 1.

removed walls of the earlier type of habitation. In addition to these are numerous structures that my companions indicated were the bases of caches, the walls of traps and slab deadfalls, and kayak rests. Across several acres of boulder field every lichen-covered stone looked as though it had been arranged in some way by man. A close search failed to turn up a single chip of flinty material, however, or anything else that might be construed as an artifact not dropped by recent campers.

Site 3. At a sandy point called *Ichyah-hak*, near the upper end of Maguse Lake, we found more heavy stone foundations such as those in the above-described sites, and beyond them 7 large, shallow pits, circular in outline, that were almost certainly the result of human workmanship. These were covered with sod like that on the surrounding ground. My companions obviously did not understand that I considered these pits to be sites comparable to either of the other types that we had examined.

Site 4. At a favorite camping place of the Padlimiut, a sand-padded ridge of boulders that forms a prominent point on Maguse Lake, we remained for 2 days to wait out a storm. On walking across sand-blown areas of the ridge, I found a few flakes of flinty material, and picked up the fragment of a large bifaced blade of gray chalcedony (Fig. 75, *1*). This is thin and lenticular in cross section, and closely resembles in size and workmanship points from the Yukon River drainage system and neighboring parts of the western Arctic. Examples are found in Johnson, 1946 (Pl. 22, 35); MacNeish, 1954 (248-9); Rainey, 1939 (392, Fig. 9, 5) and 1940 (307, Fig. 16, *1* and 3); and Skarland and Giddings, 1948 (118, Pl. 15 *B-C*). My companions failed to recognize it as a familiar object, thereby indicating to me that flint sites in that area must be scarce indeed! Later, when they saw my enthusiasm for this kind of thing, they all searched the area closely, and one of them found a bifaced blade of white quartzite (Fig. 75, *2*). These are the only flints to record from the Maguse area. It is noteworthy that each of these points has been basally ground, downward from places at the edges of the stem regions shown by ink marks in the illustration.

The evidence with which I was primarily concerned on this rapid survey was negative, that is, no extensive flint sites of an early period were found within this area well beyond the present forest edge. However, 4 kinds of archaeological remains were observed, possibly representing different time periods. These are: (1) recent tent rings, (2) more ancient habitation bases and other surface monuments, (3) pos-

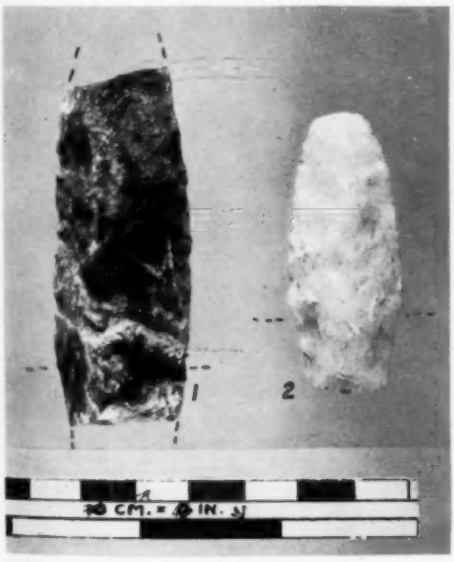

FIG. 75. Basally-ground bifaced blades found at Maguse River Site 4.

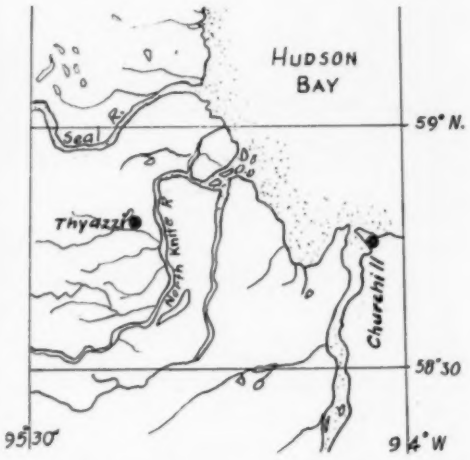

FIG. 76. Map of Churchill region, Manitoba, showing the location of the flint site (Thyazzi) on North Knife River.

sible early house pits lacking stone construction, and (4) bifaced points or blades of flinty materials recalling those of early sites in the interior of Alaska and northwestern Canada.

North Knife River, Manitoba. (See Fig. 76.) On my return to Churchill in early August, I was aided by Mr. Smith in finding Thomas Jawbone, the Chipewyan who had discovered the burins and side blades. He was receiving wages higher than an archaeologist can afford to pay, as laborer at the local military base. He clearly liked the idea of a canoe trip, however, and when I offered to increase his wages for a very short period of time, he secured a temporary leave from his work. With Jawbone and his friend, Peter Bussidor, I traveled by canoe with motor across a span of Hudson Bay to the Knife River mouth, and from there about 20 miles up the swift North Knife River. We walked several miles across muskeg on the third day in order to avoid difficult portages, but the site is actually only about a mile from the river at its nearest.

The site lies on the edge of a terrace some 50 feet higher than the relatively flat plain that leads to the high banks of the river. Spruce trees grow tall and straight at the river edge, but only scattered, slow-growing trees, twisted in grain, are found near or on the terrace. One sees many miles in all directions from the top of the terrace. The site is called in Chipewyan, *Thyazzi* (sandy). It extends from the terrace edge back 150 to 300 feet to a shallow lake about 1500 feet long. This has long been a favorite hunting place for some of the Chipewyans, whose winter log cabins are built along a timbered ravine at a near-by bend of the river. Jawbone indicated that this is a traditional place for the interception of caribou herds in their seasonal migration.

The sod that covers the sandy ground at the site is normally rather heavy, although it is by no means the spongy muskeg sod of damper places. It has been broken in a number of places at the site by the trampling of caribou, and a number of blowouts have resulted (Fig. 77). In each of these blown areas were seen

Fig. 77. A flint-bearing "blowout" at Thyazzi site, North Knife River.

quantities of chips of white or cream-colored chalcedony and red agate. Among the many chips, most of which are minute, were found the artifacts that we collected.

I determined that the artifact-bearing layer, where undisturbed, was on top of the sandy soil and just under the mat of sod. There seemed to be no deeper deposits, except where wind had altered the original surface. Between relatively open areas lay small boulder fields, but in these I saw no arrangement of the stones either as tent rings or as other structures such as those along the Maguse River. A few very shallow depressions were to be seen, but upon removal of sod there seemed to be no special distribution of flints within these areas. It must be stressed that flints were found along half a mile or more of the terrace, and that the spots in which collections were made comprise only a small part of the site. Excavation would undoubtedly bring out new information. It is likely, however, that the artifacts described below reflect rather closely the proportions of artifacts used by a single people at one time. The physical layout of the site tells us little of the age of the artifacts. The Chipewyans apparently have no knowledge either of the makers of these objects or of flint-working. The only obvious backward limit would be a time of glacial disturbance.

The Collections from North Knife River. The artifacts shown in Figure 78 are the original pieces collected by Jawbone, and at present in possession of the Smiths. It is probably not by chance that the only complete end blades from the site are the 4 shown here. These are handsome objects in their own right, while nearly everything else from the site would appear to the untrained eye to be fragmentary. This is a site of small artifacts and delicate flint work. No large artifact was found, unless the coarsely chipped objects of chalcedony shown in Figure 79 are finished pieces. It seems more likely that these and many other similar flakes and cores are blanks and discards. Some of the large flakes show signs of use about an edge, as though picked up and used temporarily for scraping or cutting and then thrown away.

The artifacts that have immediate comparative value can be placed in the following classes:

1. *Burins.* 17 specimens; 10 of these are of the type known in Burkitt's (1920) terminology as "angle oblique," that is, they are made by a burin blow delivered against a trimmed edge in such a way as to form an acute angle. They fall into Noone's (1934: 82) "scaled order." Some are trimmed from one face only, in the manner of a scraper, while others are "double trimmed," or trimmed from both faces in such a way as to create a V-shaped groove if the instrument is used as a groover. Examples:

Fig. 78, 8. Single trim; white chalcedony; broken at base; 4 burin spall scars; under surface unretouched.

Fig. 80, *1*. Single trim; gray chalcedony; 6 burin spall scars; opposite face strongly keeled.

Fig. 80, *2*. Single trim; white chalcedony; opposite face convex; lower right edge at right angle to plane face shown, but lacking negative bulb of burin scar.

FIG. 78. Flints from Thyazzi site, Manitoba, the property of Mrs. I. H. Smith. *1-4*, end blades; *5*, *6*, side blade fragments; *7*, *8*, burins; *9*, *11*, *12*, scrapers; *10*, *13*, blade fragments.

FIG. 79. Large flints, coarsely treated, and possibly artifacts, from Thyazzi site.

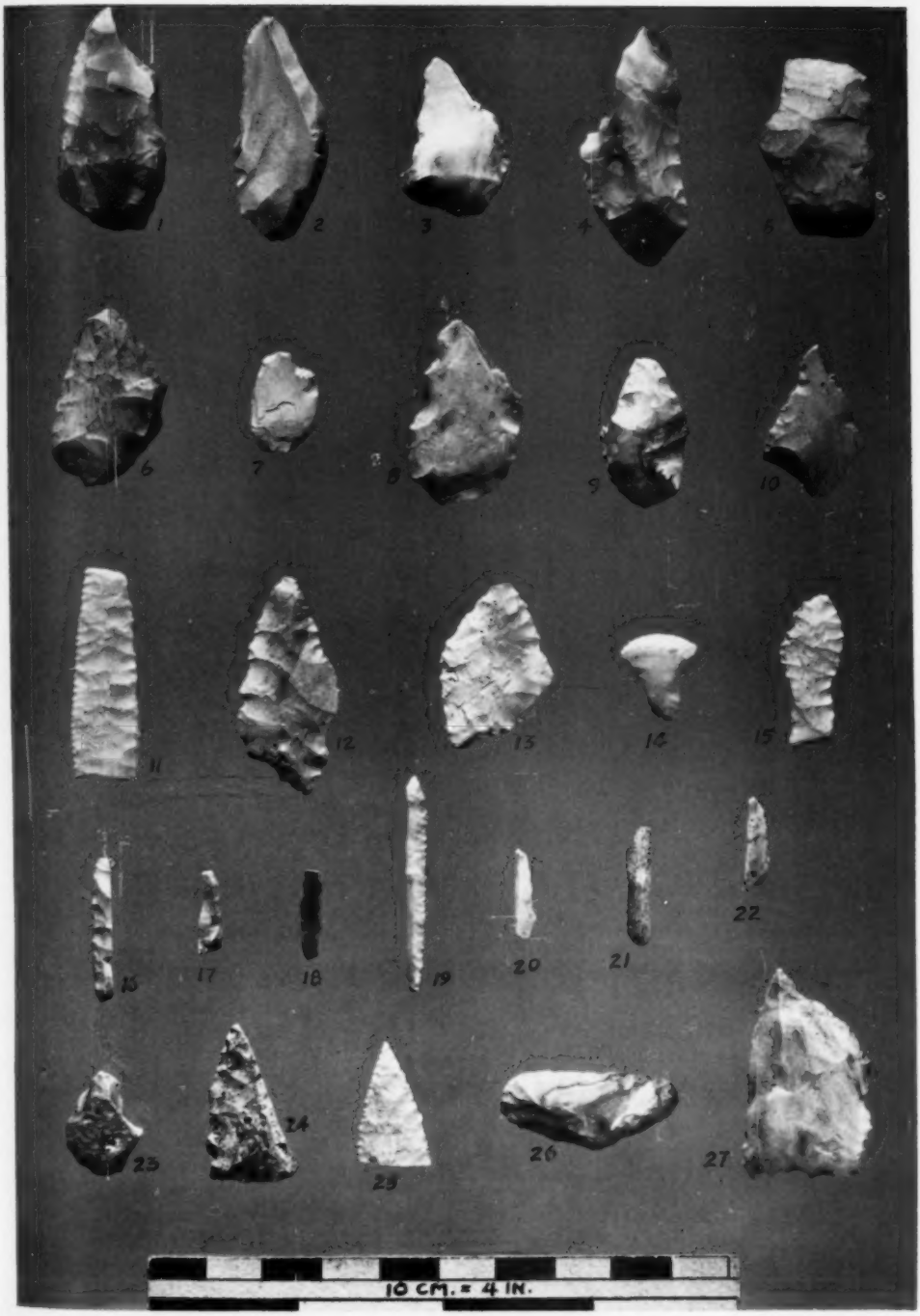

FIG. 80. Flints from Thyazzi site, Manitoba. *1-10*, burins; *11-13*, *25*, side blades and fragments; *14*, end scraper; *15*, *24*, blade fragments; *16-22*, burin spalls; *23*, *27*, drills(?); and *26*, scraper.

Fig. 80, 3. Single trim; white chalcedony; 5 burin spall scars; opposite face convex.

Fig. 80, 5. Double trim; white chalcedony; 4 burin spa.. scars along upper left edge; opposite face slightly concave above, with bulb at base.

Fig. 80, 7. Double trim; white chalcedony; 4 burin spall scars; opposite face convex.

Fig. 80, 8. Double trim; white chalcedony; 3 burin spall scars; opposite face keeled; face shown is concave.

Two specimens are perhaps variants of the "angle oblique," but they vary towards a "beaked burin"—Noone's "fluted order"—in having a series of parallel spalls removed at right angles to the proposed burin edge, half-rounding the upper edge. Examples:

Fig. 80, 4. Gray chalcedony; 5 burin spall scars along upper left edge; face shown keeled, opposite face plane; upper edge at tip prepared by flaking parallel to original upper edge rather than by edge retouching.

Fig. 80, 9. Agate; 3 burin spall scars on upper left edge; face shown keeled, opposite face convex because it is largely the bulb of a large flake.

Three specimens are Burkitt's "ordinary screw driver" burins, in Noone's "spalled order." In this type, the second burin blow is directed at an acute angle to the scar of a first burin blow. A burin of this kind, if drawn back and forth for deep grooving would cut a groove with rectangular section, but if turned at a right angle, would provide a strong V-shaped cutting edge for shallow grooving or surface engraving (Bourlon 1911: 268, Fig. 1). Examples:

Fig. 80, 6. Gray chalcedony; 5 burin spall scars at base of the broad burin scar showing on upper right of specimen; double convex.

Fig. 80, 10. Pink chalcedony; 7 burin spall scars; opposite face keeled.

The other specimens (including Fig. 78, 7) are broken in such a way as to obscure the typology.

2. *Burin spalls.* 13 specimens; examples: Figure 80, *16-22*. *18* is of pink chalcedony or agate, the others of white chalcedony. *16*, *19*, and *21* are triangular in cross section because they are the first spalls struck from a prepared burin core. The others are quadrangular in cross section, and show both the positive and the opposite negative bulb of a secondary burin spall. Opposite the bulbar end of *17*, *19*, *22*, and a specimen not illustrated is the sign of use retouch that shows these spalls to have had a function of their own. (A paper on the subject of burin spalls as artifacts which was read before the Society for American Archaeology at the Annual Meeting of May, 1954, in Albany, is being prepared for publication.)

3. *Wide burin spall* (?). At first glance this object appears to be the fragment (21 mm. long by 7 mm. wide at worked edge) of a microblade. As this would be the only microblade found at the site, however, one looks closer and finds that it has not been driven off the end of a prepared microblade core, but has broken squarely across its widest portion after the fashion of a burin spall. This squared edge where the break has occurred has been minutely retouched in the manner of the re-used burin spalls here and at other Arctic sites. This is the only artifact of its precise form of which I have knowledge, but it seems likely that it occurs in other collections not yet closely examined for microscopic retouch.

4. *End blades.* Four specimens (Fig. 78, *1-4*) made of white chalcedony are whole or nearly so. Figure 78, *1* is a stemmed, biface object, presumably an arrowpoint to be inserted into an arrowhead of hard organic material. The method by which a point of this form is likely to be hafted is indicated by antler arrowheads with open sockets found at Ekseavik, a fairly recent Kobuk River site in western Alaska. With the Ekseavik arrowheads were found flint points closely similar to this one from Manitoba. (Giddings 1952:, Pl. 28, *14*; Pl. 27, *4*, *5*). Figure 78, *2* is another bifaced stemmed point, part of the stem of which seems to have been broken off. Figure 78, *3* is a stemless, bifaced point that is basally thinned on both faces. This form recalls hafting in pincer-type arrowheads like those of Ipiutak (Larsen and Rainey 1948, Pl. 1, *5-7*). Figure 75, *4* lacks an obvious means of attaching to an arrowhead, and is possibly a side blade. As it is symmetrical and retouched similarly on both edges, however, we may tentatively class it as an end blade. The smallness of these points and their similarity to others that almost surely functioned as arrowpoints 2000 years ago in Alaska, lead us to assume that the North Knife River specimens were products of archery. Radiocarbon dates for Norton-culture (palae-Eskimo) levels at Cape Denbigh in which arrowpoints are common have been published as 1460± 200 years old for a younger phase and 2016±250 years old for an older phase (samples 506 and 563, Johnson 1951: 15-16).

5. *Side blades.* Eight specimens of thin, bifaced blades are identified as insert side blades for either weapon heads or knives because of asymmetry, one arcuate edge, and a difference in the manner of trimming the arcuate edge from the other edge or edges. Examples:

Fig. 78, 5. Broken bifaced blade of pinkish chalcedony; retouched more carefully on strongly convex edge.

Fig. 78, 6. Broken bifaced blade of pinkish chalcedony; right edge the better trimmed; dark spots are lichens.

Fig. 78, 13. Bifaced blade, broken at both ends; white chalcedony; finer trim on left edge.

Fig. 80, 11. Bifaced blade fragment, with break at lower edge. Serration on left edge proclaims this the cutting edge opposite an inserting edge. The upper edge, as well as the lateral edges, are trimmed from both faces.

Fig. 80, *12*. Side blade or knife blade; pink chalcedony; opposite face is plane, with few shallow lateral flake scars.

Fig. 80, *13*. Side blade or knife blade; bifaced; pink chalcedony; broken at lower edge.

Fig. 80, *25*. Bifaced blade fragment; pink chalcedony; left edge serrated as cutting edge.

6. *End scrapers*. Three objects of white chalcedony are classed as end scrapers, as follows:

Fig. 78, *11*. Upper surface strongly convex, meeting slightly concave under surface that is unworked from an original flake scar. Possibly this has been a longer implement, as no bulb shows on the under surface.

Fig. 78, *12*. End scraper evidently designed for hafting; surface shown convex, under surface concave except at stem, where trimmed at right angle to length of the artifact.

Fig. 80, *14*. Except for its unusually small size, this appears to be an end scraper. The under surface is trimmed only lightly about the stem.

7. *Knife blades*. Figure 80, *15* is a bifaced object of white chalcedony that appears to be suitable only for end-hafting as a knife blade. Other objects and fragments (such as Figure 80, *12-13*) could also have been hafted as whittling- or skinning-knife blades.

8. *Drills*. Three objects may have been used as drills. Figure 80, *23*, of pink chalcedony, is concave on the opposite face, and shows signs of use as a drill about all sides of the small (upper) end. Figure 80, *27*, is convex on the face shown and concave opposite. The uppermost point appears to have been used in drilling. Another object of white chalcedony is very similar outwardly to the knife blade in Figure 80 (*15*), but it is thicker and stronger, and its edges are dulled as they might become in drilling through organic material.

9. *Scrapers and Miscellaneous*. A number of flakes in a variety of sizes and shapes have been retouched either by use or by intent along one or more surfaces. Figure 78, 9 is a thick flake of white chalcedony, retouched (by use?) at the lower edge, where the under surface is plane. Figure 78, *10* is a broken keeled scraper or drill. The opposite face is retouched only at the upper edge; the remainder is a plane flake scar surface. Figure 80, *26* is a carefully executed scraper of agate, with a steep keel at the lower part of the face shown. The opposite face is plane.

Some fragments of worked pieces are possibly parts of larger blades than those illustrated. Figure 80, *24*, for instance, is a blade fragment of pink chalcedony, broken at the right edge. This could have been the lower edge of a rather large end blade. Four chalcedony flakes have been treated in a manner similar enough to suggest a special form of artifact. These are flat pieces, rectangular to square in outline that have a trace of retouch about 2 or more edges. They resemble the illustrated "scale-shaped piece of flint" from the Sarqaq collection (Meldgaard 1952: 223, Fig. 76, *15*) and those described by Meldgaard from East Greenland (Bandi and Meldgaard 1952: 21; Plate 1, *21-6*) insofar as it is possible to make long-range comparisons between photographs and short descriptions.

Discussion. The placing of this small collection of isolated flints into time and space limits involves roughing it into the broader picture of Arctic events, for there is no comparative local archaeology. The things that are missing are perhaps as important as those that are present, for the absence of certain imperishable materials helps to isolate the Knife River find from other aspects with which it at first appears to be similar. Although the artifacts described above are few, the thousands of raw flakes and cores that were examined in the field and in the laboratory help to limit the range of stone work. The most significant facts about the collection seem to be the following:

1. This is a site in which the stone work consists of flints that are almost exclusively very small. Fragments such as those in Figure 79 may be the parts of large implements, but if so they are both crude and rare. In this concentration on very small flints the site resembles those that have been commonly treated together as sites of Dorset culture (those, for example, described in Collins 1950, Harp 1951, Holtved 1944, Jenness 1925, Knuth 1954, Leechman 1943, Manning 1951, O'Bryan 1953, Rowley 1940, and Wintemberg 1940, among others), along with the Denbigh Flint complex and related collections (as in sites at Cape Denbigh described in Giddings 1949 and 1951, and in Hopkins and Giddings 1953; in sites of the Brooks Range described in Irving 1951 and 1953 and in Solecki 1951; and in the Trail Creek Caves described in Larsen 1951 and 1953). The Campus site, the site on the University of Alaska campus that first stressed the importance of microblades in America (Nelson 1937; Rainey 1939), and at least 2 sites of the Brooks Range in Alaska discovered by Solecki (1950), and other early sites of the Arctic and sub-Arctic (in particular, the Kluane Lake and other Alcan Highway sites described by Johnson in 1946, the Birch Lake site reported by Skarland and Giddings in 1948, and the sites of the Mackenzie River drainage system, now being explored by MacNeish, as described in 1953 and 1954, especially Pointed Mountain site,

and certain early Aleutian horizons most recently elucidated by Laughlin and Marsh in 1954) can hardly be included here, although they are related in their production of microblades.

2. No trace is found of polished slate, nor even of ground flinty materials. In the absence of knives or implements of polished slate in any form, Knife River differs from most of the Dorset sites, and resembles in this respect the Independence culture of Northeast Greenland (which, as Knuth clearly shows in his 1954 publication, is not to be equated with the palaeo-Eskimo cultures of West Greenland), the Sar-

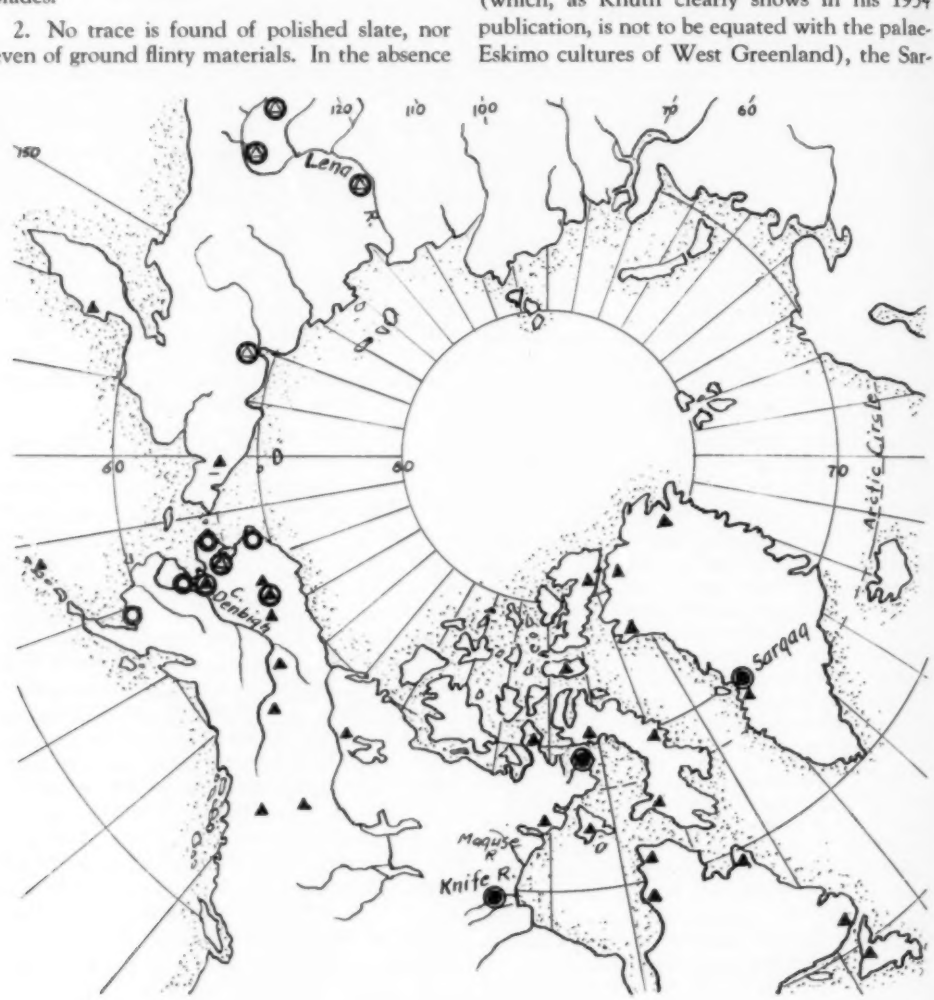

FIG. 81. Map of the circumpolar regions showing distribution of flint sites and their classification as suggested in text.

qaq culture of Disko Bay and the Denbigh Flint complex and related finds of Alaska, and possibly the earliest aspect of culture in Collins' Frobisher Bay excavations (Collins 1950: 24-7). None of these other aspects is, however, entirely without grinding, such as that on burin-like implements or adz blades.

3. The most prominent class of artifacts is the burin, together with burin sharpening spalls, some of which were themselves used as artifacts. Although the true burin is to be found in several sites not yet clearly distinguished from the Dorset culture, it is always rare, and usually even questionable as to its proper inclusion with the more widespread Dorset types. Burins thus show up in the Frobisher Bay sites, in Knuth's Independence culture, in sites of Disko Bay, in the Pointed Mountain site of western interior Canada, in Brooks Range sites of Alaska, and in the Denbigh Flint complex. Only in the Sarqaq collection, however, where 1/6 of the flints were burins and spalls, and in the Denbigh Flint complex, where about ¼ of the flints were burins and spalls, are the proportions clearly significant. Also, it seems that only at Sarqaq and Cape Denbigh are all 3 of the forms of Knife River burins present. We know also that at all of these sites burin spalls were used in their own right. (The Sarqaq evidence has been received in a letter from Helge Larsen.) Information on this score is not now available for other eastern burin sites.

4. The microblade and core seem to be entirely absent at Knife River. This sets the site apart from all of the others under consideration, with the near exception of Sarqaq, where occurred one microcore, but apparently no microblades (Meldgaard 1952: 223).

5. The bifaced inset side blade is a common form at Knife River, and at Sarqaq (Meldgaard 1952: 222-3, 229), but it is otherwise almost absent throughout the eastern Arctic. The bifaced side blade is, on the other hand, very prominent in both the Denbigh Flint complex (Giddings 1951: 195) and later palae-Eskimo sites of western Alaska (Giddings 1949: 88; Hopkins and Giddings 1953: 20-1; Larsen 1950: 181-4; Larsen and Rainey 1948: 99-101).

6. Among the thousands of flakes examined at the Knife River site, no trace or fragment of a lamp or stone dish (nor of a potsherd) was observed. The absence of the lamp and cooking pot is therefore suggested, but by no means proven. Such an absence would be distinctive among the known sites of the eastern Eskimo area.

7. The four end blades from Knife River are closely similar to illustrated specimens from Sarqaq. While none of them is typical of Dorset culture, the range of Dorset forms of end blades is great enough to encompass them also. The typical triangular Dorset end blade is not represented, although some of the Dorset triangles approach the lanceolate form of Knife River (Fig. 78, 3).

The scrapers and other artifacts of the Knife River site are compatible with almost any of the earlier Arctic cultures and they seem to offer little classificatory aid just now. Difficult and sometimes misleading as it can be to compare flint work from printed photographs and descriptions, there seems to be no doubt that the Knife River collection and that described by Meldgaard from Sarqaq are generically close, while both of these manifestations are at considerable variance with Dorset or other sites of the eastern Arctic. I learn, through correspondence with Larsen, and in conversation with Meldgaard, that excavations at the Sarqaq site in 1953 firmly established a stratigraphical separation of the earliest (Sarqaq culture) levels from Dorset levels. Meldgaard adds from his excavations at Iglulik, Melville Peninsula, in 1954 (see also Rowley's 1940 treament of Dorset sites in this area) that a burin site was discovered on an eminence remote from a succession of beaches containing houses of Dorset culture. It looks as though we have in the Sarqaq and Knife River sites a glimpse of pre-Dorset handicraft in the eastern Arctic that extends to both the sea coast and the inland regions.

The archaeological scene in the Arctic has been changing at so great a rate recently that even those of us who work in the field have trouble in keeping up with the new sites and their implications. Certain sites, some of them very old, can be readily classed as Eskimo because the majority of the artifacts in them are recognized by present-day Eskimos in the same regions as objects recently or presently in use. The Thule and related phases of culture all the way across the American Arctic fall into this category. Then, there are the extensive coastal sites at opposite extremes of the present

Eskimo range that seem to represent large local populations of a respectably early period. Their artifacts differ in so many important respects from those of Eskimo sites as to lead us to wonder about the linguistic and other affinities of their makers. The term "Paleo-" or "palae-Eskimo," as defined by Larsen and Rainey, is useful in distinguishing at least the older sites, such as Ipiutak and related remains in Alaska, and Dorset and related sites in Canada and Greenland . We should remember, however, that Eskimos today find these sites and materials largely strange and mysterious. Finally, there are the sites scattered through the interior that offer only a few flint implements each, and that have little or nothing to say about villages or about the cultural affinities of people who left them. The flints from these sites may thus far be treated descriptively and comparatively, and they have a great deal of bearing on the persistence of technics across space and through time, even though we should be guessing if we were to call them either "Eskimo" or "Indian." The Knife River site belongs in this group.

Any comparison of all of the older sites of the Arctic (that is, older than the Thule-related sites) would have to be on the basis of flint technics and flint usages, for flints are common to the small and the vast sites alike. In sorting out the flint complexes of the Arctic for my own convenience, I find it useful to speak of sites as "burin sites," "microblade sites," and "side blade sites," with respect to emphasis on (*not merely the presence of*) one or more of these distinctive technics. The early Arctic sites arrange themselves in this scheme in the following way (as indicated in Fig. 81):

Burin, side-blade, microblade sites: Denbigh Flint complex layer and 2 Anaktuvuk Pass sites of the Brooks Range.

Burin, side-blade sites: Knife River and Sarqaq.

Side-blade, microblade sites: Trail Creek Caves of Seward Peninsula, Alaska, and sites of the "Siberian Neolithic" from Lake Baikal to the Lena and Kolyma River mouths. Although burins are present in some sites of the Siberian Neolithic, they are so scarce as to form no important part of the flint work except in the Lena basin and on the Arctic coast. Even there, Okladnikov found no sites in which burins are as prominent as they are in the Knife River site. Kullata, the site with most burins, produced only 12 specimens. (See Michael 1954: 294, 360.)

Microblade sites: Dorset sites, Independence sites, and the sites of the Yukon-Mackenzie drainage system (Pointed Mountain, Kluane Lake, Birch Lake, Campus, and so on).

Side-blade sites: Ipiutak and other palae-Eskimo sites of Alaska (Norton, Bristol Bay sites, and so on).

One sees in this the possibility of tracing both time and the paths of persistent diffusion, but any attempt to test the cultural validity of the scheme, and to project it, will have to wait until a great deal more digging and analytical work can be done.

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UNIVERSITY OF PENNSYLVANIA
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A CONTRIBUTION TO THE ARCHAEOLOGY OF THE UPPER KUSKOKWIM

CHARLENE CRAFT LEFEBRE

THE DEPARTMENT OF ANTHROPOLOGY of the University of Alaska has for many years solicited information concerning archaeological sites in Athabaskan as well as Eskimo territory from trappers, prospectors, casual travelers, and residents. One of the more likely reports, received from B. A. Stone of Medfra, Alaska, concerned the Lake Telida region. Lake Telida is located about ½ mile from the McKinley Fork, called the Tatlathno River in early accounts (Herron 1901), of the Upper Kuskokwim drainage. It is about 100 miles southwest of Lake Minchumina and is northwest of Mt. McKinley National Park (see Fig. 82).

During the summer of 1949 2 students of the University of Alaska, Leona Neubarth Lowery and George Schumann, and the author conducted a field trip into this area. This trip was made possible by the author's appointment to the Margaret Snell Graduate Fellowship of the American Association of University Women, to which I should like to take this opportunity to express my gratitude.

The present winter village of Telida is about 3 miles by winter trail (probably 10 miles by riverboat) downriver from Lake Telida, with only one Indian family, that of Carl Sesui, permanently resident. The Sesui family also have a fish camp on the McKinley Fork at its nearest point to Lake Telida, which they occupy most of the summer while gill-netting and trapping whitefish in the lake and the stream draining it.

Two other historically inhabited villages (see Fig. 82) had been reported, and we hoped that prehistoric material would here come to light. Approximately ½ mile upstream from the fish camp is one of these sites, called by Mr. Stone "Old Telida." We subsequently found that this village had been established about 1910 and that it had been abandoned about 1918. The village is comprised of 2 log cabins, a Russian Orthodox Church, a 4-pole cache, a cemetery, and the remains of dog hutches, fishracks, and steam bath, all in an advanced state of collapse. Trenching in this site yielded nothing older than metal tools, fragments of phonograph records, tar paper, warped gun barrels, and tin cans.

The other historical site, to which we subsequently referred as "1899 Telida," had been occupied at the turn of the century when the Herron Expedition explored this area. According to Carl Sesui, who was a small child when Lieutenant Herron and his men wintered at Telida in 1899, these were the first white men to visit this area although he indicated that

trade goods, apparently from Hudson Bay rather than Russian sources, had been filtering in for some decades. This 1899 Telida is located about a mile by trail (3 miles by river) downstream from the Sesui's present fish camp. It probably dates only from the last half of the 19th century, older than Old Telida, at least. It was occupied as long as the latter, until 1918, that is; but no buildings, even in as poor repair as those at the other village, remain, although the cache at the edge of the lake was said to have been floated up from this village some 25 years ago. According to our informant, the cabin where the Herron expedition stayed the fall and early winter of 1899 was located on the bank of the river, and this older portion of the village has sloughed off during spring floodwaters since its abandonment. This site, like Old Telida, yielded no prehistoric material.

Several isolated old house sites were pointed out to us and were investigated, but were found to be quite recent, although older than the villages above. One of these (termed "that beaver house" by Carl Sesui, ostensibly because of the semisubterranean nature of this house type) had been in ruins when pointed out to him by his grandmother when he was a boy. This site, located on a cutoff meander on the other side of the birch ridge west of the lake, looked promising. It was about 16 by 20 feet and had a central fire area; the floor was depressed about a foot below the ground surface. Base logs, roof beams and poles, and part of the flooring and platform were distinguishable. A birchbark basket, trade beads, a wooden sled stanchion of an old type, and cut bones were among the objects found within this structure buttressing our hope of its having some respectability of age; and then the inevitable tin can (identified as a black-powder can with "Pat 1859" impressed on its bottom), china and glassware fragments, a wooden tobacco pipe, a piece of blanket fabric, and pieces of metal destroyed this hope. This house probably had been built around 1850, possibly a decade or so earlier, which in general corroborates Carl Sesui's statement: "That beaver house hundred years old — I dunno, maybe two hundred."

The vegetation type of this region is taiga, and the terrain is very swampy, much of it muskeg and niggerheads. The lake is sur-

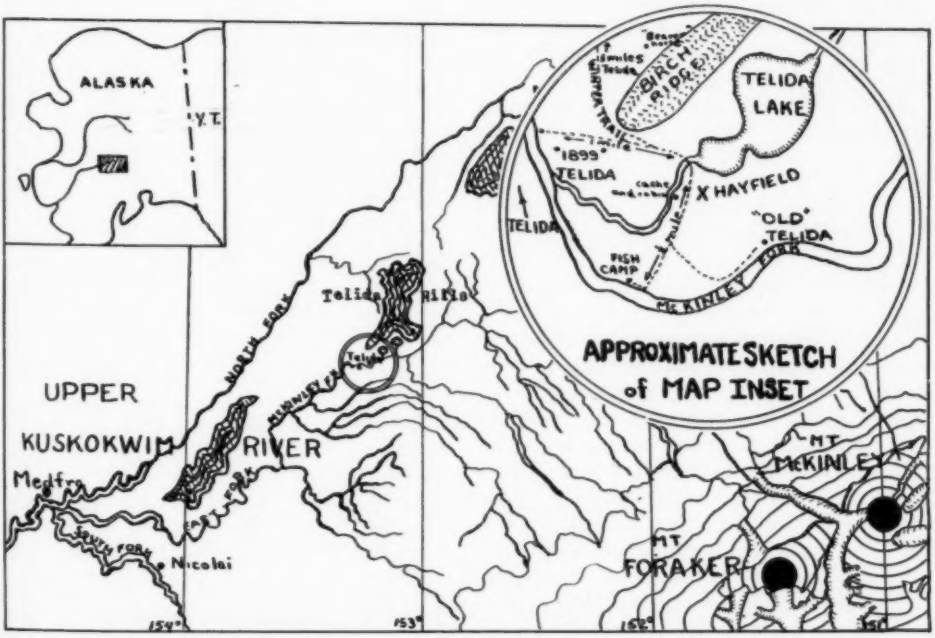

FIG. 82.

rounded by a quaking bog of floating vegetation, and there is little high ground directly on the lake. However, Carl Sesui had said that he remembered old "beaver houses" along the stream that drained the lake near the cache and the cabin, but that these had since settled and were at present certainly in the swamp.

We had noted that the village sites were invariably on high well-drained ground, which would be expected, and that after abandonment they became grown up in fireweed and tall grass, now cut and dried as "hay" to supply winter bedding for the sled dogs. We did not have facilities for searching out other winter villages along the river. But from what we know of recent Athabaskan economic pursuits (Osgood 1936), villages apparently were never very permanent; and when the game moved or was hunted out in one area, the local group moved on to another. There is, however, in this vicinity a permanent source of food for a limited population in the fish of the lake, especially the whitefish. It is, in fact, from a large variety of whitefish that the name "Telida" is derived. (The local Athabaskan term is more like "te-lai-ya," the accent on the second syllable.) This persistence of historic villages near the lake and the presence of a modern fish camp suggested to us that it surely could have been a focus for people living on the McKinley Fork in prehistoric times also.

About 70 yards back from the stream which drains the lake, between the cache and the lake, was a "hayfield" on fairly high ground which we successfully investigated for material that predated the tin-can era. In this hayfield we found wherever we prospected a layer of ash and blackened earth and stones representing old hearth levels under a layer of sod from 6 to 11 inches thick. The hearth layer was from 6 to 12 inches deep and lay on sterile clay or sandy clay which was frozen at from 17 to 20 inches below the surface ("permafrost"). No timbers of houses were discovered, and there were no surface indications of occupation except for the above-mentioned presence of "hay." This was not a village site in the usual sense of the word, but rather it apparently had been a fish camp site occupied while the band was fishing in the lake and the stream and hunting in the surrounding area. Concentration on trenching this area resulted in the recovery of prehistoric material including obsidian flakes; potsherds; hearth and boiling stones; ashes; fish, animal, and bird bones; stone and bone tools; and birchbark. The complex is characteristic of other sites in Athabaskan territory of recent prehistoric date (Rainey 1939; de Laguna 1947). There follows a description of the material recovered from this excavation.

Adzes. Two types of adzes are represented in this collection. The first is a small splitting adz (de Laguna 1947: 154) which is D-shaped in cross section and is grooved for hafting (Fig. 83, *1*). This adz had been pecked from a fine-grained basic igneous pebble; the blade had been polished, the butt retaining the original pebble surface.

The second type is also single bladed and is similar to the type de Laguna (1947: 162) describes as a pick-like adz, "possibly used as a generalized weapon as well as a tool." This broken specimen had been pecked from siltstone and a ridge was left between shallow grooves for hafting (Fig. 83, *2*). It is roughly elliptical to oval in cross section.

The specimen illustrated in Figure 83, 3 is a broken quartzite pebble which had been used as a hammerstone.

Obsidian Tools. A group of interesting flake and blade tools manufactured from obsidian are illustrated in Figure 83. These are, with the exception of 4c, which

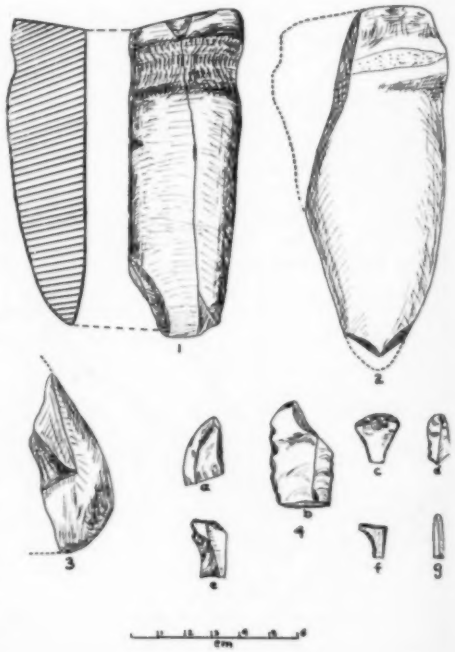

FIG. 83.

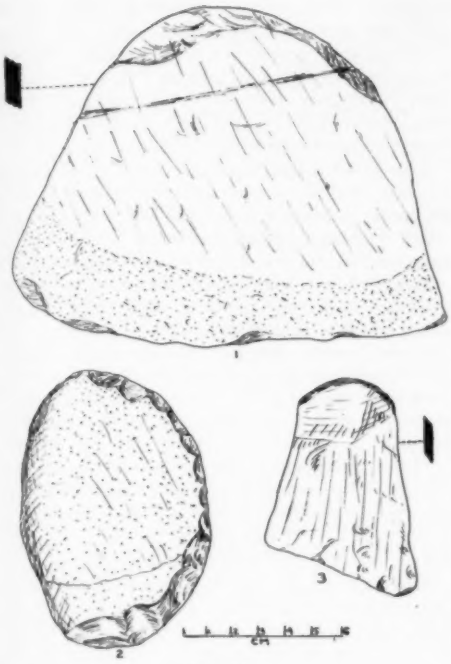

Fig. 84.

is a broken blade or flake knife, all microlithic in nature. The microliths were all found in a limited area of the hayfield, but in identical hearth and ash levels under sod as the rest of the material. *4a* is a small sidescraper on a flake; *4f* is also a sidescraper but the retouch is along a concave edge, possibly an arrowshaft smoother. *4c* is a finely made thumbnail endscraper on a flake. The retouch on *4e* is peculiarly located on one corner of the blade, possibly for use as a grooving or incising tool. *4d* is a blade apparently retouched by use. The last of the series, *4g*, is a broken lamellar flake, probably struck from a prepared core, similar to those found in the Campus site collection (Rainey 1937: 387). Several other small generalized retouched and unretouched blade and scraper fragments were identified in the collection of obsidian chips. No cores were found, either of the prepared polyhedral or unprepared types.

Unlike the Indians living near the Dixthada site queried by Rainey concerning the chipping of obsidian and who had no traditions of the practice (Rainey 1937: 366), our informant recalled stories of the "old people" making knives and projectile points of "that glass" which apparently was only found as river pebbles.

There are several small broken flakes of chert, jasper, chalcedony, and other fine-grained flintlike materials which may be retouched blade and flake tools of types similar to the above, but are too fragmentary to be identified surely.

Scrapers. Several tools, readily identified as skin scrapers by Carl Sesui and his wife, are represented in this collection. Rainey (1937) describes a type of pebble scraper, which he calls *tci-tho*, in the following words:

> A flat oval pebble selected from the beach was struck so that a thin, disc-like flake was detached; the edge of the flake was then battered against another stone to produce a blunt, retouched edge.

The specimen illustrated in Figure 84, *2*, which is made of slate, fits this description of the tci-tho exactly, the flake being oval rather than disc-shaped.

Another type is the ulu-shaped scraper (de Laguna 1947: 128), whose form takes advantage of the natural cleavage planes of the slate, schist, and similar materials from which they have been manufactured. Slabs of such stone, ¼ to ½ inch thick and big enough to be held comfortably in the hand, have been provided with a curved scraping edge by chipping. An example of this type of scraper is represented in Figure 84, *1*, and a smaller variety of scraper made in the same way in Figure 84, *3*. There are 11 other unfinished and broken scrapers in the collection, made of similar materials and similarly produced.

Ulus. Four knife blades of the type commonly designated in northern archaeology as ulu or ulo were identified in this collection, Figure 85, *1* being the only complete specimen. This blade has an odd peaking of the semilunar cutting edge, and only the beveled cutting edge has been polished. The 2 illustrated in Figure 85, *2* and *3* represent broken ulu blades, both showing evidences of sawing on their polished surfaces. These 3 specimens, all with curved cutting edges, and the one unillustrated, which has a straight cutting edge, are made of slate.

Fig. 85.

Netsinkers. Four netsinkers were found in the hayfield trenches (Fig. 85, 4-7), all of tabular schist with grooves for tying to fishnets. This type has been used as recently as Carl Sesui's boyhood.

Projectile Points. Three of 5 chipped arrow or projectile points are illustrated in Figure 85, *12-14*, all manufactured from slate. Two of these are tanged forms. *13* is flat in cross section, having been split along a cleavage plane on one side and chipped flat on the other, with retouch on the edges; the tang is broken from this specimen. *14* is a flat diamond in cross section, having been chipped of sandy-grained slate as if it were flint. *12* and a more complete specimen not shown both have straight bases and are shaped to a point. They are thin and flat, broken along the plane of cleavage of the slate. The fifth specimen, unillustrated, has been tentatively identified as a broken tip of a straight-based point.

Miscellaneous Stone Objects. Figure 85, *8* is a perforated oval piece of schist, utterly undistinguishable in material from large quantities of similar stone in the trenches, which was possibly used as a pendant. 9 is a small piece of slate with striations indicating its use as a whetstone. *10* is a broken fragment of slate showing 2 parallel grooves made by sawing. The last item, *11*, is clay, colored to a pinkish buff, probably by hematite, which has been ground, presumably for paint, on 4 surfaces. Carl Sesui still uses a special "dirt" to impart a reddish brown color to snowshoe frames and the ladles he carves with his crooked knife from birch.

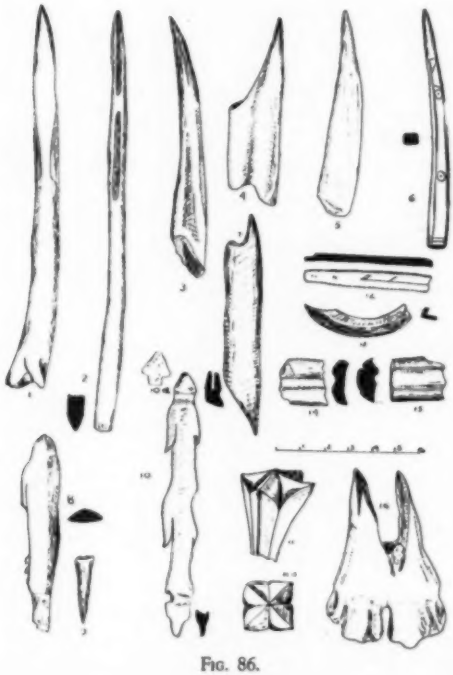

Fig. 86.

Unillustrated are quantities of river pebbles, fire-blackened, which were probably used as boiling stones. Carl Sesui remembered this technic of dropping hot stones into a birchbark basket filled with water until it boiled, as an alternative method of cooking.

Bone Awls. Several awls were found in the hayfield trenches. Bird bones seem to be the material used for Figure 86, *1, 2,* 3, and 6, and *4, 5,* and *7* are of animal bones, 4 being of caribou leg bone. *7* has a peculiar hook worked into one end, while the other end is a conventional awl point. It possibly could have been utilized as a net gauge. *2* has an awl point on one end and a beveled "screwdriver" point on the other. *6* is the only decorated specimen in this category, being in cross section rectangular with rounded edges. Two incised lines run from the butt ¾ of the length of the awl on the broader surfaces. Near the butt of the awl 2 parallel incised lines join these lengthwise incisions; on the opposite surface 3 parallel lines occupy the same position. Compass-made circles divide the length of the awl into approximate thirds on the broad surface.

There are 5 other awls, not illustrated, in the collection, all in a very poor state of preservation.

Bone Arrowheads. Only 2 bone arrowheads are represented, both in poor repair. Figure 86, *8* is an arrowhead with a broken butt; the tip had been reworked and most of the small barbs which had run along one edge have been sheared off. This specimen is roughly triangular in cross section. The second example is a conical butt probably broken from an arrowhead.

Figure 86, *10* is a harpoon-arrow type which our informant said had been used in his boyhood for hunting muskrat. This had an iron blade in place when found. There are barbs on both edges and a notch at the tongue-shaped butt for attaching a retrieving line. Since this specimen was found on the surface of the sod, under a thin layer of moss, it is more recent than the hearth layers and is probably not over 100 years old.

Figure 86, *11* is a fine blunt arrowhead with a quatrefoil shape. Single and triple incised lines run down opposite sides of the arrowhead with 3 short lines at right angles to them near the tip of the "petals." The butt had been broken away, leaving no indication as to the method of hafting.

Numerous beaver incisors, complete and fragmentary, were found in the hearth layers, as well as beaver jaws cut to expose the incisors for their removal. Doubtlessly, some of these incisors had been hafted for chisels, scrapers, or knives (Osgood 1940: 83) although no evidence of their utilization could be found (Fig. 86, *13*).

Miscellaneous cut bones in the collection are represented by the caribou bone in Figure 86, *16*, which actually came from the "beaver house."

Unique Decorated Bone Objects. Figure 86, *12* is a small tab of bone with an indented groove at one end and on the opposite surface a group of incised lines, possibly an ownership mark. The other 2 items are

grooved and incised pieces of bone shown in Figure 86, *14* and *15*. Unfortunately these are broken. Their use is problematical.

Pottery. Pottery was recovered from the hearth layers and from the sod above them. It was extremely fragmentary, at most only 2 or 3 sherds from any single pot, so little can be postulated concerning shapes. However, some remarks may be made concerning paste, temper, and rim shapes.

There does not seem to be any clay suitable for pottery making in the immediate vicinity of Telida. Our informant, Carl Sesui, reported that his grandmother had told him about cooking pots she had made of "dirt" in her youth, although he himself had never seen such a pot. She had told him also that the Telida people got the clay for such cooking pots from the Innoka River, which is at least 100 miles overland.

All the ware seems to have been molded by hand, probably by the paddle method described for the Yukon (Osgood 1940: 146-9).

> . . . The bottoms of the pots are always made thick. Then the walls are added by sticking on pieces about two inches high and three inches long of the desired thickness. These are squeezed together at the joints. When the wall of the pot is half finished, one hand is put against the wall and the outside slapped with a wooden paddle. A sliding blow is given with the paddle which streiches the clay upwards. . . .

Potsherds range in surface color from buff and brown to light and dark gray. The firing varies, some thick sherds showing distinct zoning in cross section, outer zone buff, inner zone gray.

Tempering methods, also, seem to be consistent with practices on the Yukon (Osgood 1940; de Lagune 1947). Some exfoliated sherds show clear impressions of grass and leaves and small feathers, at times ½ inch in length. Other sherds are tempered with pulverized vein quartz and coarse sand, and one small sherd is tempered with something that glitters like mica, possibly crushed schist. Some inclusions are quite large, one rim sherd (Fig. 87, 3) having a piece of quartz some 5 by 10 by 3 mm. between the decorative incised line and the rim. The invaluable Carl Sesui, again quoting his grandmother as authority, said that they mixed the "dirt" with moose hair, which partly corresponds with Rainey's information from Chief Mathew (Rainey 1939: 376) concerning chopped bear's hair being used as an ingredient in pottery. Such temper was not identified in this collection, and microscopic analysis was not practicable with such a fragmentary collection.

Several rim shapes are illustrated in Figure 87, *1a-d*, varying from rounded to flattened at the rim edge; *1b* shows a marked bulging below the rim, and *1d* has a considerable outward flare. Two bottom sherds were identified, both badly exfoliated, but showing a flattish inner surface with heavy charred organic incrustations.

Very little decoration is in evidence, probably due to the smallness of the sample, but that which is present is in the usual pattern of incised lines or grooves and dots or punctations (de Laguna 1947: 144-9). Figure 87, *2* is a sherd from the rim with a row of dots below 2 parallel grooves. Figure 87, 3 is a rim sherd with 2 incised lines running parallel to the rim, the sherd having broken away at the lower line.

Birchbark. Several pieces of birchbark, either folded or with possible awl-made holes were found, although none were complete enough to be identified as baskets.

Fauna. A final comment should be made concerning the occurrence of identifiable animal and bird bones which were encountered in this excavation. Among the larger animals were moose, black bear, and caribou; among the smaller, adult and kit beaver, muskrat, weasel or squirrel, and possibly fox. Evidence of freshwater mollusks and numerous bones and scales of fish indicate the dependence of the former occupants of this area, like their living descendents, on the lake, stream, and river. Particularly interesting were literally handfuls of scales which were found among the fire-blackened hearth stones and which, even to our untrained eyes, looked like the scales of the whitefish and northern pike we ourselves were eating daily. Among the bird bones were duck, goose, and swan; smaller bird bones were possibly willow grouse or snipe.

In summary, the material herein reported represents a complex similar to the recent prehistoric described by de Laguna and Rainey, and probably is not of great antiquity, with the possible exception of the microlithic obsidian tools. The position of such artifacts in the sequence of types in the prehistory of the Athabaskans is not clear, and the evidence in this site does not clarify the situation.

It is hardly necessary to insist on the importance of field work in Athabaskan country. Recent work pushing back the time horizon in the coastal Arctic regions would indicate that some-

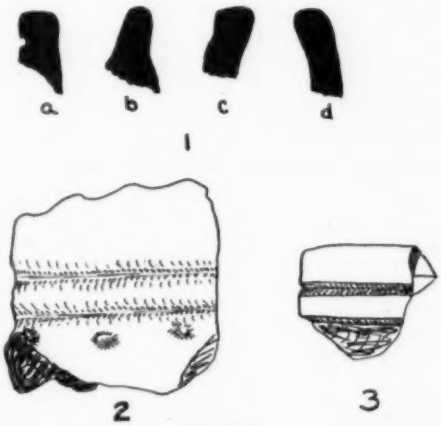

Fig. 87.

where in the interior also will be found traces of Alaska's, and possibly America's, earliest inhabitants, as well as the picture of the ancient Athabaskans themselves.

Planned fieldwork is a particular problem in this region because it is so difficult to locate sites, which were seldom occupied more than a season or two, a consequence of the migratory habits of the people involved. Further, there is the almost jungle-like capacity of the country to cover up traces of habitation with layers of spongy moss and forests of birch and spruce in relatively short periods of time. Also, it is quite possible that the older sites are buried in the even more uninhabited, untraversed areas along old stream and riverbeds, because the Kuskokwim, like all meandering rivers, constantly is cutting off oxbow lakes and forming new channels. Away from the areas where modern methods have built roads and highways, in the valleys of the interior the rivers and streams are, as they were in ancient times when climatic conditions were similar, still the only means of moving from one place to another during the summer season. During the winter, dog sled and snowshoes will take people overland when the ground is frozen. You cannot go far through muskeg and swamp; you go where the river takes you during the summer.

Careful reconnaisance, such as was carried on by Rainey and de Laguna on the Yukon River, is needed on the Kuskokwim with systematic excavation of the more likely sites. Especially, attention should be paid to the cut-off meanders where logically the older sites should be. Here, somewhere in the interior, will be found some of the answers to the questions archaeologists are asking about early man in America. It will hardly be found by accident as the interiors of Alaska and Canada are sparsely inhabited, there are few "interested amateurs," and Carl Sesui's generation is disappearing fast.

Finally, I want to acknowledge my debt to several individuals. Otto Geist, expert paleontological field worker at the University of Alaska for Charles Frick, was the authority for the identification of the animal and bird bones in this collection; Bert Griffin, formerly on the faculty of the University of Alaska, served in like capacity in the identification of the stone material. Without Leona Neubarth Lowery and George Schumann, there could not have been a field trip, and any success we had, I owe to them. Our guiding genius, as the frequent appearance of his name in this paper might indicate, was Carl Sesui. It is impossible to gauge how much we owe him, so I will only state my obligation and my hope that all anthropological workers in the field are fortunate enough to find someone like him.

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SAN LEANDRO, CALIF.
October, 1954

CONTRIBUTIONS TO THE ARCHAEOLOGY OF NORTHERN HONSHU

PART III, SITES IN MIYAGI AND CHIBA PREFECTURES

HOWARD A. MACCORD

THIS, the third article of the series, describes sites visited, or on which test excavations were made, during the fall of 1949 and spring of 1950. No extensive excavations were undertaken due to the press of other duties. The sites at Satohama and Daigi (Miyagi Prefecture) have been partially excavated by Japanese archaeologists, but no English language data are available. The remainder of the sites reported herein have not previously been reported.

KAMAGA-SAKI CAVE

Extending over 1 mile east of Shiogama and forming the north side of Shiogama Bay is a long, narrow, irregularly shaped peninsula known as Kamaga-Saki. Near the east end and facing toward the southeast is a vertical cliff of sandy marl at the foot of which is a large, wave-cut cave. The cave floor is about 7 feet above high tide and has been smoothed for use as a threshing floor by the farmer whose house stands directly in front. The cave is boxlike — 50 feet long, 15 feet from front to back, and the level ceiling is about 8 feet above the floor. The ceiling is entirely smoke-blackened, as are the back and end walls from a line about 2½ feet above the floor up to the ceiling. The unblackened area indicates the extent which the floor of the cave has been lowered by the farmer, assisted by archaeologists.

Guided by Mr. James C. Kitamura of Sendai and Mr. Muranuchi of Shiogama, the writer visited the site in August, 1949, and obtained permission to dig a test square in a part of the deposit not previously excavated. Returning in September, 1949, with several helpers, a test square 5 feet by 10 feet was dug from the present surface to bedrock at a depth of 43 inches (Fig. 88).

The surface was composed of shells and compacted beach sand containing occasional modern refuse, such as nails, glass, and sweepings from the threshing floor. Immediately beneath this was 19 inches of clean shells, containing no dirt or sand, but enclosing clean refuse bone, Yayoi sherds, flint chips, and 1 stemmed, flint arrowpoint (398518). One bone "gouge" (398517) was the only bone implement found in this deposit. Beneath the shells were alternate layers of burned sand, shells, wood ash, bones and sherds in varying proportions. All sherds from the lower layers are of the Final Jomon period. Many rounded boulders of the sandy marl of the cliff were found in the beach sand at the bottom of the test square. In some cases, sherds were beneath the stones indicating that the layer was a surface of shifting sand and boulders when Final Jomon man first lived in the cave. The bottom layers of the test square were water soaked, and seepage was a problem in digging. Before the test square could be carried as a trench through more of the deposit, heavy rains raised the water table in the sand to within 1 foot of the surface, flooding the squares and collapsing the exposed walls of the deposit. Consequently, the test square was refilled, and no further digging was done at the site.

The shells and refuse bones have been identified to represent the following fauna:

Mammals

Pig (*Sus leucomystax*)
Deer (*Cervus nippon*)

Mollusks

Barbatia obliquata (Gray)
Anadera inflata (Reeve)
Crassostrea gigas (Thunberg)
Cyclina sinensis (Gmelin)
Venerupis (*Ruditapes*) *philippinarum* (Ad. and Reeve)
Mactra veneriformis (Deshayes)
Lunella coronata coreensis (Sby)
Neptunea arthritica (Bernardi)
Polinices ampla (Philippi)
Batillaria multiformis (Lischke)
Thais tumulosa clangira (Kuster)
Rapana bezoar (Linne)

Pottery found in the test square was of 2 types. The Yayoi sherds from the upper shell stratum were scattered, and no vessel could be reconstructed from the sherds found. The traits observed indicate that the vessels were grit-tempered, straight-sided vases with flat bottoms. Basal sherds 2½ to 3¼ inches in diameter show either a conventionalized leaf design, or are plain. Sides of the vases are about $\frac{3}{16}$ inch thick and are red or buff in color. Surface treatment is either fine cord marked or plain with flat-stick incisions. No rim sherds of the Yayoi ware were found.

The sherds representing the Final Jomon period are not numerous and do not represent a restorable vessel. Sherds indicate that the vessels were grit-tempered vases with 5 to 10 inch diameter orifices. No basal sherds of this type were found. Thickness of sherds range from $\frac{1}{4}$ to $\frac{5}{16}$ inches with exterior and interior colors varying from red through yellow, buff to brown. A few sherds are soot-blackened. Surface treatment is

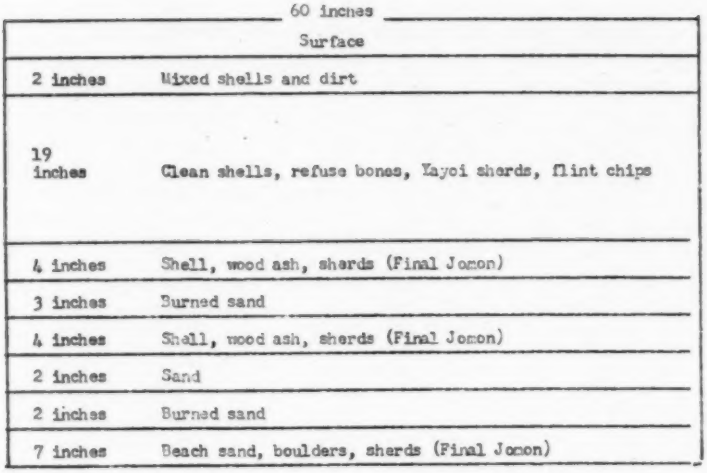

FIG. 88. Diagram of stratification in test square dug in Kamaga-Saki cave.

cord marking, predominantly fine, though with some coarser cords shown, as well as some blunt-stick incising. Designs are limited to single or multiple parallel lines incised on the outside of the rim, and a few sherds show similar incised lines on the inner surface. Rims are round and excurvate, some showing rounded crenelations. Several rims are grooved on the upper face, a trait found in many wares of the Later Jomon, and carried over as an isolated trait in the Final Jomon. The sherds found resemble some of those from the Kamegaoka area, Aomori Prefecture, and also some sherds of the Omori type (Groot 1951, Pl. 53).

DAIGI SHELLHEAP

(*Also known as "Taigi" shellheap*)

Approximately ½ mile due east of the city of Shiogama, Miyagi Prefecture, are the remains of what was once one of the largest and best-known shellheaps in all Japan. It originally covered about 10 acres of a prominent hilltop and was over 10 feet thick in places. Many Japanese archaeologists worked the site in years past, and several excellent collections in the museums at the Universities of Tokyo and Sendai were made at this site. During World War II the Japanese used the hilltop for antiaircraft gun emplacements for the protection of Shiogama Harbor and its shipyards. The construction of the large gun pits, underground ammunition storage rooms, and other activities almost completely destroyed the site.

The writer visited the site in company with James C. Kitamura and made a representative surface collection from undisturbed portions and from the spoil-heaps left by the military construction engineers. Artifacts saved were:

1 large antler beam from the Japanese deer (*Cervus Nippon*)
1 boar tusk (*Sus leucomystax*)
1 mammal jaw (raccoon dog, *Nyctereutes procyonoides*)
1 worked antler tine, not specific (398524)
2 fragments of worked bone, not further identifiable
3 flint scrapers (398526)
7 arrowpoints, some broken or incomplete (398525)
2 arrow "blanks," flint
Samples of flint and obsidian spalls
Fragment of sandstone tablet, showing incised design (398523)
Clay disc, made from potsherd
1 restorable vase, 6¼ inches high, 7 inches in oral diameter, cord marked, grit tempered; cord marked base 2 inches in diameter; rim rounded and straight with paired, pointed crenelations (398521)
46 rim sherds representing 44 vessels
6 basal sherds
8 miscellaneous body sherds
6 vessel appendages

Pottery traits indicated by the sherds (other than the restorable vase described above) are typical of the Middle Jomon period. They represent cylindrical vases with either straight or flaring rims, flat bottoms, and often elaborate rim appendages, usually complexly sculptured. The paste is grit tempered, well baked, and ranges in color from red, through yellow, buff, brown, and gray to black. Size of vessels is indicated by the basal diameters of from 3 to 6 inches and oral diameters of from 4 to 14 inches, with wall thicknesses from ¼ to

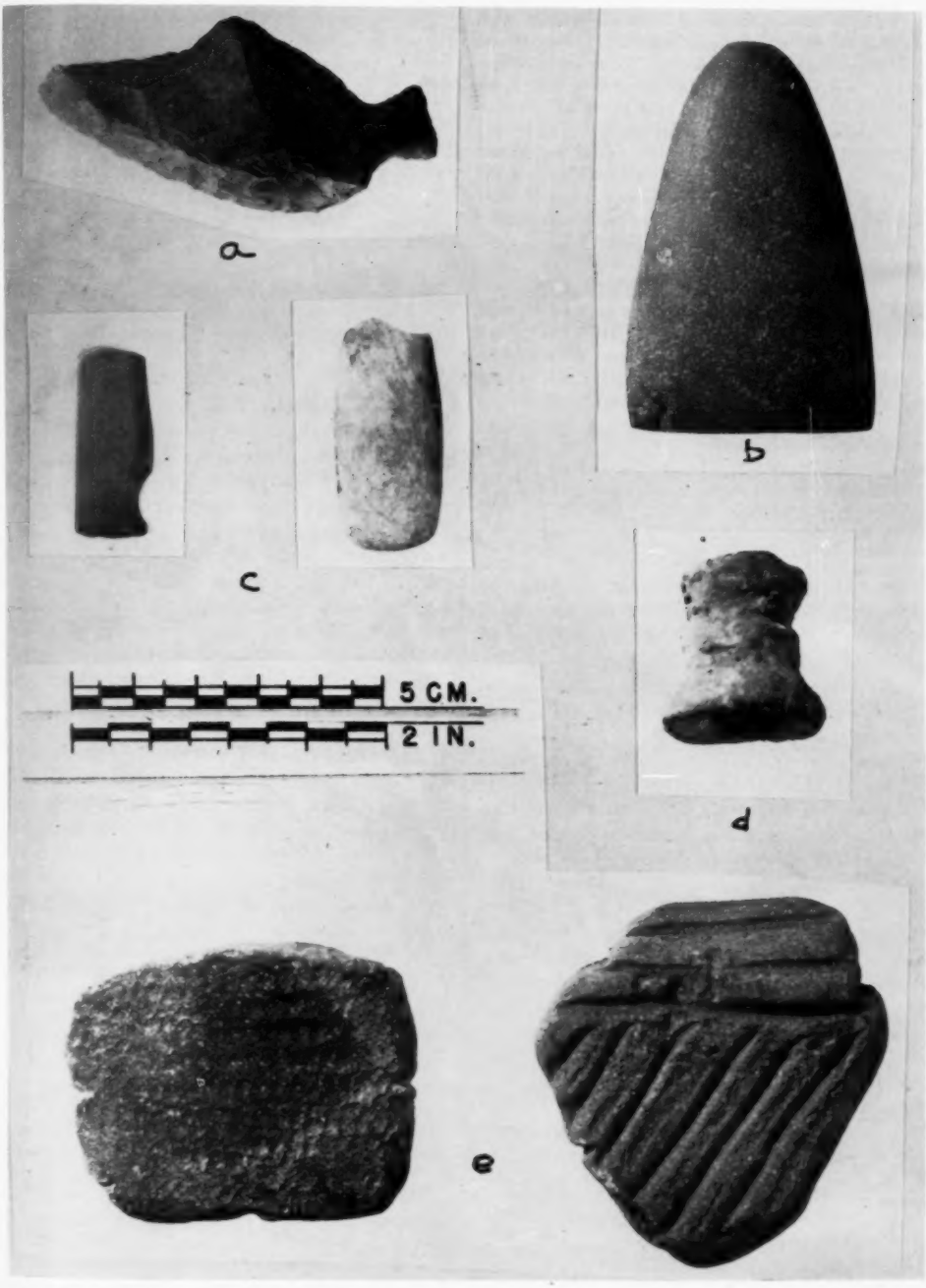

Fig. 89. Artifacts from northern Honshu. *a*, tanged flint scraper; *b*, celt; *c*, miniature celts; *d*, clay "earplug;" *e*, notched sherd netsinkers. *a* and *c* are from Satohama shellheap; *b* from Samya shell field site; *d* and *e* from Okubo shellheap.

½ inch. Surface treatment is predominantly cord marked, though some sherds are rubbed smooth and bear blunt-stick incised zigzag and geometric patterns. Designs are elaborate and not limited to the upper portions of the vessels, but in some instances cover the entire surface. Some of the designs are incised over unmodified cord impressions, while others are incised on a plain surface. Ropelike ribbons are added to a few sherds as an appliqué forming a zigzag design. Incised lines parallel to rims and small pinched nodes around vessel necks complete the inventory of designs. Rims are straight, either rounded or square in cross section. Some of the rims have rounded or bifurcate crenelations, while others are elaborately and massively "sculptured." Many have thickened rims, some of which are notched, either on top or on exterior surfaces. No designed interior surfaces were noted. One rudimentary pedestal is present as a basal sherd, while other bases ar either bamboo mat imprssed or cord marked. Repair of vessels by lacing is indicated by 2 sherds having holes drilled on opposite sides of an old break.

At present the site is being cultivated and the gun emplacements leveled.

Satohama Shellheap

One of the largest shellheaps in Japan is located at Satohama, on the peninsula which encloses Matsushima Bay on the east. The peninsula is composed of marl and sand and is largely pine covered. Where it is cleared and under cultivation many archaeological sites have been disclosed, particularly of the Jomon period. The Satohama site is located on a hilltop about 125 feet above sea level and overlooks one of the many inlets which cut into the peninsula. The site is partly wooded and partly under cultivation. Marine shells abound in the topsoil, while roadcuts and agricultural terraces show midden depths of up to 8 feet. Surface indications of the site may be found over at least 20 acres. Due to our lack of time at the site, no excavations were undertaken; however, several Japanese archaeologists have excavated at the site.

The site was visited on August 7, 1949, in company with James C. Kitamura of Sendai who served as our guide and interpreter. Approximately 3 hours were spent in making a surface collection at the site. Thousands of sherds were noted, but only those showing special features were collected. Stone implements and worked bone fragments were also saved. Refuse bones on the surface were mostly fish, though deer and other mammals were represented.

The pottery fragments date the site from the Later and Final Jomon. One specimen, a Haji-type pot bottom bearing a conventionalized leaf design indicates occupancy during the protohistoric period.

Nonpottery artifacts found are as follows:

1 poll end of a granite celt (398530)
2 small jadeite celts or chisels (398533) (Fig. 89 *c*)
1 tanged flint scraper (398532) (Fig. 89 *a*)
3 flint arrowpoints (398531)
1 fragment of "cut" antler (398529)

Pottery artifacts are as follows:

1 Haji basal sherd 4¼ inches in diameter showing tree leaf
1 plain basal sherd 2⅞ inches in diameter
2 Final Jomon pouring spouts, 1½ to 2 inches long (398528)
2 loop-handle fragments (398528)
9 rim sherds (2 sculptured, Later Jomon) and 7 others all Final Jomon of the Kamegaoka type.

Suzu Rock Shelter

On the property of Ito Shozo at Suzu, Shichigahama-mura, 2 miles east of Shiogama, Miyagi Prefecture, there is a vertical cliff known as the cliff of Nariyama. The cliff is of fossiliferous sandstone and marl overlying a stratum of friable conglomerate and faces to the northwest on the south shore of Shiogama Bay, a part of the larger Matsushima Bay. At some time in the past when the land level was lower in relation to sea level, a wave-cut cave was eroded into the stratum of conglomerate. This cave, actually a rock shelter, was about 100 feet long, open on both ends, and about 12 feet wide from the point of greatest overhang to the rear wall of the shelter. The floor of the cave was later elevated about 40 feet above sea level, and the cave became habitable. Men of the Final Jomon period lived there for a while and then were succeeded by men bearing Yayoi culture.

The site was visited on August 20, 1949, and 2 days were spent digging into the face of the midden. Our guide, James C. Kitamura, reported that the upper part of the midden, in what had been the deepest part of the shelter, had been partially excavated by Japanese students.

The site as we found it showed a midden deposit 7 feet deep. The upper 4 feet consisted almost entirely of clean shells, containing bones and sherds, while the lower portion consisted of mixed shells and earth with a few sherds and bones. In the western end of the deposit, the midden was largely wood ash with shells, sherds, and refuse bones scattered throughout.

The pottery from the lower part of the center represented the Final Jomon, while the upper parts contained many Yayoi sherds. The sherds in the wood-ash deposits were of Yayoi type only, and in some places were so plentiful as to be a solid mass of sherds. Since they were exceedingly fragile and poorly fired, good specimens were difficult to collect.

One group of sherds from the deeper layer represents the Final Jomon period and comprises most of the rim of a large vessel (1) (398511). Buried with it were a perfect cylindrical bone awl (398514), 3¼ inches long, and a round stone rubbed smooth on 2 opposing sides (398515). Another small incomplete bowl found in the ash deposit on the west end of the deposit is designated Vessel 2 (398512). The pottery traits disclosed by these 2 vessels are as follows: Vessel 1 is a grit-tempered bowl 12 inches in diameter at the mouth. The walls are $\frac{3}{16}$ inches thick and are reddish inside, but buff and gray on exterior surfaces. Some sherds are soot-blackened. Surface treatment is fine cord marking, with the cord impressions rubbed out in places. Incised lines parallel to the thickened rim comprise the only design. The rim carries 4 small, pointed crenelations equally spaced on

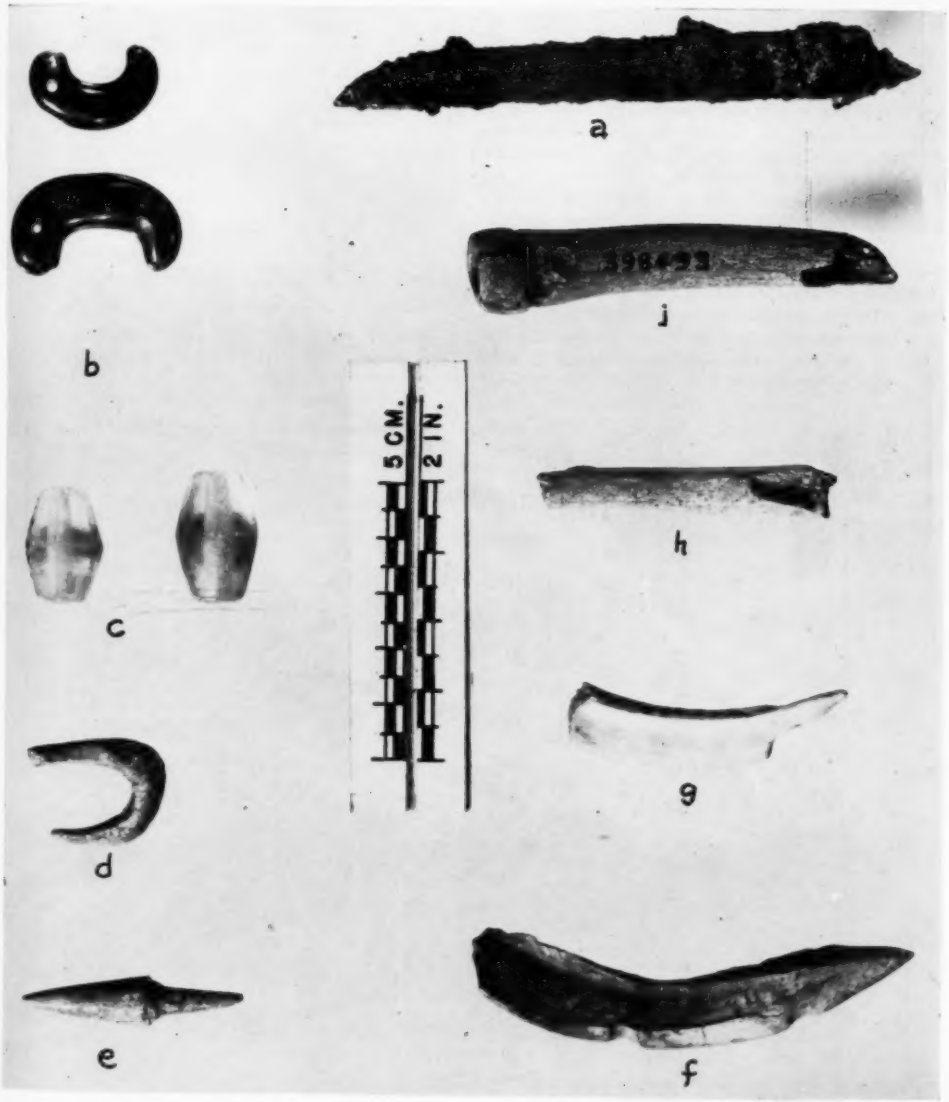

Fig. 90. Artifacts from northern Honshu. *a*, iron knife blade, and *b*, *c*, agate and quartz beads, from Miyano cave-tomb; *d-i*, bone implements from Okubo shellheap.

the rim. The rim top is cord marked and slopes outward. The total height and base characteristics of the bowl could not be determined due to lack of essential parts.

Vessel 2 is a small, grit-tempered bowl with constricted neck and a flaring mouth. The orifice is 5⅛ inches in diameter. Lack of the base precludes exact determination of height and base type. Exterior colors of the ware are yellow, buff, and black, while interior colors are yellow, buff, and brown. The exterior is cord marked on upper portions of the body of the bowl and on the neck and shoulders, but are obliterated on the lower parts. A simple design incised on the neck and rim is the only ornamentation. The flaring rim is rounded in cross section. This vessel is probably from the Yayoi period, since other sherds found associated with it are from that period.

Miscellaneous sherds from the ash deposit represent solely the Yayoi period of occupancy, and are grit tempered. They appear to have been bowls with flat bottoms and straight flaring sides, without distinct neck or shoulders and no specialized rims. Basal sherds vary from 1 to 3½ inches in diameter and are ornamented by a conventionalized leaf or by bamboo-mat impressions. Small mammiform basal sherds appear to have been the "feet" of bowls, but no complete specimen, which might establish this fact, was recovered. Colors both inside and out range from red through yellow and buff to brown. A few sherds are finely cord marked, but most are plain with either horizontal or vertical scraping indicated. A few sherds bear simple incised or punctate designs near the usually plain rims. Most rims are pointed in cross section, though a few are rounded.

Miyano Cave-Tomb

On September 18, 1949, a party consisting of James C. Kitamura, Ono Takagi, and the writer went to the village of Miyano, about 25 miles north of Sendai, Miyagi Prefecture, to investigate the reported finding of a number of protohistoric cave-tombs. We found the school teacher who had reported the find and saw the material he had recovered thus far. It consisted of stone beads, a bronze bracelet, 2 badly rusted iron swords, and several small bowls, made of hard-baked gray clay, of the ware known as *Sueki* (*Iwaibe*). After seeing his collection we visited the site of the tombs. The

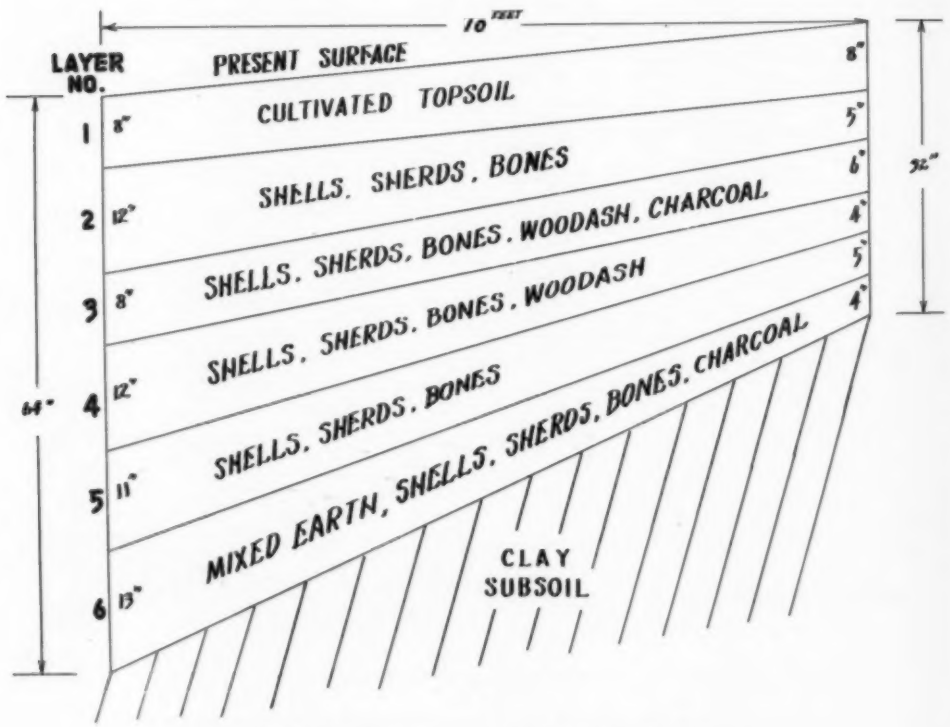

Fig. 91. Diagrammatic section of a portion of Okubo shellheap.

cliff containing the tombs is about 1½ miles west of the town of Miyano and about 3 miles northwest of the town of Tsukidate, and is known locally as Kodate-Yama (Castle Hill). The cliff is a steep hill representing old wave-cut cliffs and faces to the south over a wide, rice-paddy field. About 40 feet above the level of the rice paddies and about 100 feet below the top of the hill was a bare spot left after a landslide in the spring of 1949. The bare spot exposed the calcareous gravel composing the hill and showed at least 11 openings about 1 yard in diameter, which resembled animal burrows. The openings were spaced about 4 feet apart and were in 3 distinct tiers. Immediately after the landslide, local farmers investigated the openings and saw that they were artificial, man-made caves. Local legends attribute such caves to the Ainu (Yezo) and they are called by a name indicating this, *Yezo ana* (ana, hole or cave). The local school teacher had been called to see the openings, and after digging into the loose earth which partially filled the "caves," he determined that they were cave-tombs of the early historic or protohistoric (Kofun) period of Japanese history. A small article in the Sendai newspapers was the only public notice given of the find.

After photographing the hillside, we asked if we might dig one of the untouched tombs. Told to help ourselves, we started removing the loose dirt with trowels. The soil was light powdery silt containing occasional small stones. The silt was rather chalky and left a white powder on everything it touched. The undisturbed sides of the tomb were easily recognized as was the floor, when it was reached. We troweled carefully through the earth and disposed of it by pushing it behind us, where it fell down the steep hill. We found no trace of bones or coffin, but at random through the fill of the tomb found the following artifacts:

Blade of an iron knife, 4 inches long (398540) (Fig. 90 *a*)

2 beads of agate (magatama) 1 inch and 1¼ inches long (398541) (Fig. 90 *b*)

2 beads of quartz (Kirikodama) $\frac{15}{16}$ inch long (398542) (Fig. 90 *c*)

Rim sherd of Sueki-type pottery (398543)

The cave extended into the hill about 1 yard, but there was no way to determine the original length of the tomb prior to the landslide. The tomb was 32 inches wide at the floor level and was 34 inches high at the center of the arched top of the tomb. The floor was fairly level, but dipped slightly to the back. No evidence was found of any type of closure which the tomb might have had originally.

The type of cave-tomb described above was a common method of burial during the Kofun period, also characterized by the erection of burial mounds. This

Fig. 92. Vessels from Okubo shellheap. *a*, Vessel 9; *b*, Vessel 5.

period lasted from about 100 B.C. (on Kyushu) to about A.D. 900, overlapping the prehistoric Yayoi period and the historic Asuka, Nara, and Heian periods.

Okubo Shellheap

This site is a prehistoric refuse dump located on the sides of a small plateau at Okubo, 4 miles southeast of Kisarazu City, Chiba. It is on the property of several farmers, but all excavations were made on the property of M. Yamaguchi, who not only consented to the digging, but enthusiastically assisted in the work. The plateau is approximately 75 feet above sea level and is about 1½ miles from the present shores of Tokyo Bay, in the valley of a small stream, the Karasuda River. The plateau is largely under cultivation and shows scattered sherds and a few shells, flint chips, and so forth, on the surface. A small surface collection was made. Near the present precipitous sides of the plateau, the surface is white with marine shells, and sherds are plentiful. In this area, 3 test squares were dug, as follows: 1, 10 feet square; 2, 6 feet square; 3, 5 feet square.

The refuse was bedded parallel to the former slope of the hill and showed some stratification. A typical cross section of the deposit is shown in Figure 91. No pits or other features were found underlying the refuse deposit.

Shells found in the refuse were all of marine origin and were usually in good condition. Species as identified by J. P. E. Morrison, Division of Mollusks, U.S. National Museum, are:

Anadera subcrenata (Lischke)
Euvola laqueata (Sowerby)
Chlamys Laetus (Gould)
Ostrea denselamellosa (Lischke)
Crassostreas gigas (Thunberg)
Meretrix lusoria (Roeding)
Venerupis (*Ruditapes*) *philippinarum* (Ad. and Reeve)
Mactra veneriformis (Deshayes)
Solen gouldi (Conrad)
Umbonium costatum (Val.)
Batillaria multiformis (Lischke)
Polinices didyma (Roeding)
Rapana bezoar (Linne)
Babylonia japonica (Reeve)
Hemifusus tematanus (Gmelin)
Fusinus perplexus (A. and Ad.)

Fig. 93. Incised design from Vessel 6, Okubo shellheap.

Mammal bones were fairly plentiful with those of the deer (*Cervus nippon*) predominating. Also identified were bones of the pig (*Sus leucomystax*) and raccoon dog (*Nyctereutes procyonoides*). Large, irregular lumps of bone were termed parts of whale vertebrae, but certain identification was not made.

Fish bones were not numerous and were usually quite small and fragile. Identified were those of teleost, shark, Belonidae, and a Sparidae.

In layers 2 to 5 (Fig. 91) the shells were clean and contained practically no soil. In several instances small pockets of unbroken snail shells were found. Also in some instances a white, greasy substance, apparently wood ashes, was found in pockets as if a fireplace had been emptied. The layers shown in the figure were not separated by definite lines or zones, but were distinguishable only by a change in the bedding of the shells. This indicates that the deposit was used continuously as a refuse pile, and that no appreciable time elapsed between deposition of the separate layers. However, cultural evidence indicating some lapse of time is found in the pottery. That from Layer 6 is obviously older, and is characterized by reddish colored, crude, thick-walled pots, usually large in size. This ware is typical of the Horinouchi period (early part of the Later Jomon). The clean shell layers (2 to 5 inclusive) yielded ware of the later part of the Later Jomon, usually thin walled, with smaller and more artistic forms of bowls, plates, vases, cups, and so on. These are the Ubayama and Omori types of Groot. Scattered through the shells were hundreds of sherds, animal bones, and rarely, a bone implement. As a rule the sherds were small, and only in few instances could sherds from the same pot be found together. Since the deposit was a refuse dump

Fig. 94. Vessel 7, Okubo shellheap, typical of Omori type pottery; height 11½ inches.

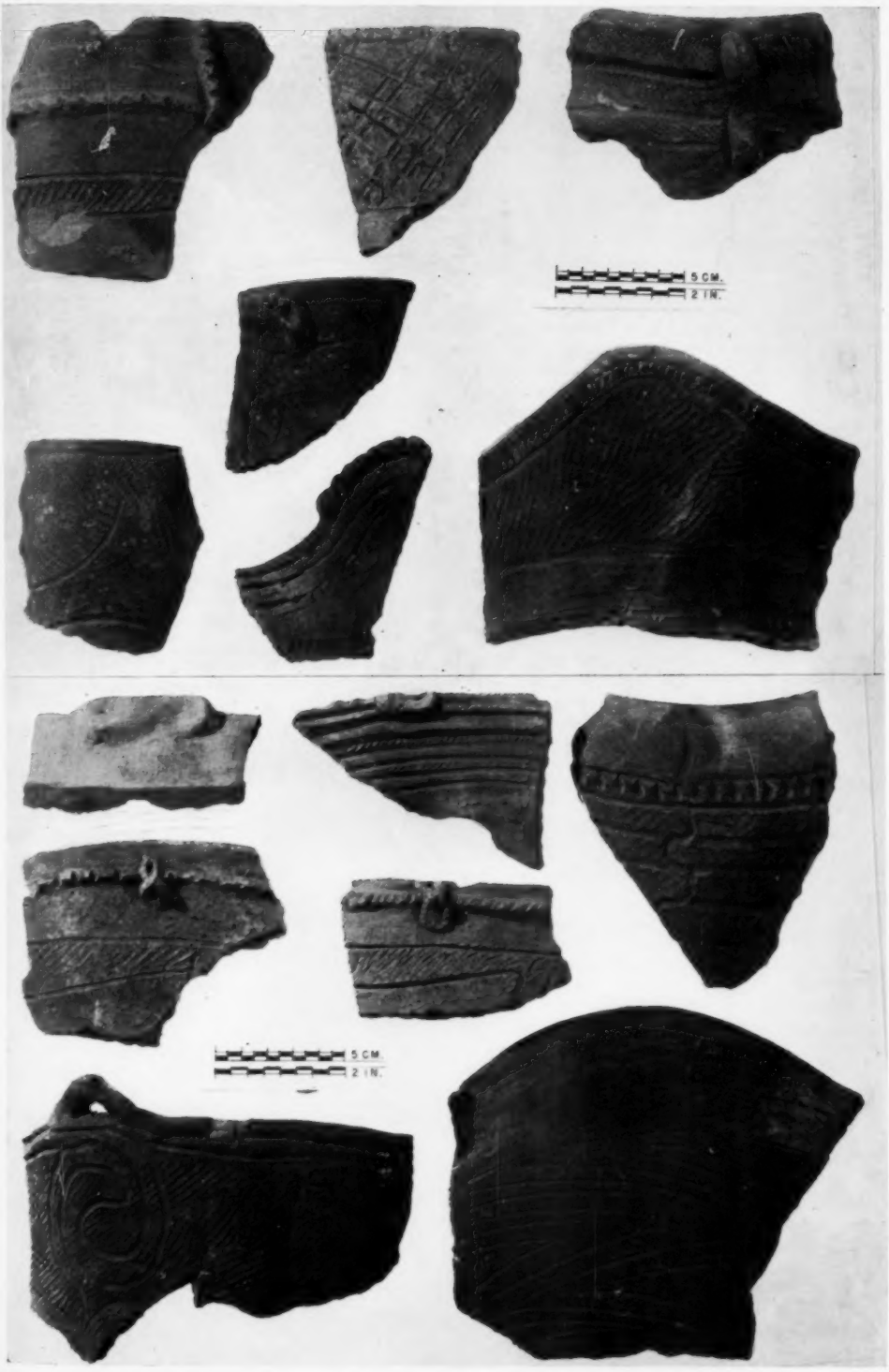

Fig. 95. Rim sherds from Okubo shellheap, showing various decorative technics.

this scattering of pot fragments was to be expected. The exceptions to the rule are Vessels 5 and 7 which were found almost complete.

Eight restorable vessels were recovered, as were large portions of 2 others which are nonrestorable. These vessels are numbered from 1 to 10 and their description is as follows:

Vessel 1 (398476) is an oval, grit-tempered bowl 2¾ inches high with a basal diameter of 3 inches. The orifice is 8 inches by 10 inches. Thickness of the body sherds is $\frac{1}{16}$ inch. The base is plain, but shows that previous cord marking had been obliterated by rubbing. Exterior colors are buff, brown, and black, while the interior is buff and gray. Fine cord markings cover most of the exterior, and the rim is straight with a rounded cross section. No designs or appendages are present.

Vessel 2 (398478) is a bowl 6½ inches high. The base is 2½ inches in diameter, while the mouth is 14 inches. The grit-tempered ware, $\frac{1}{8}$ inch thick, is black in color both inside and out. Surface treatment is plain, showing vertical marks made by scraping the unbaked vessel. The rim is slightly incurved and is rounded in cross section. No ornamentation or design is observed.

Vessel 3 (398477) is a grit-tempered, flat-bottomed bowl 3½ inches high. It has a 3½-inch basal diameter and an 8-inch mouth diameter. The side walls are ½ inch thick and red in color both inside and out. The surface was originally finely cord marked, and designs consist of cord marking erased outside curved incised lines. A collar on the neck of the bowl is indented at 6-per-inch intervals. Figure-8 shaped knobs at 4 points on the neck collar complete the ornamentation. The rim is badly chipped and cannot be described in more detail.

Vessel 4 (398479) is a grit-tempered vase with straight sides and concave bottom. The bowl is 3⅛ inches in height, 4⅛ inches in diameter of mouth, with a plain base 3 inches in diameter. The walls are ⅜ inch thick, red, buff, and black in color on outer surfaces, and buff and black on inner surfaces. Surface treatment consists of coarse cord markings with the lower portion scraped horizontally. Oblique cord impressions bounded by an incised line 1¼ inches from and parallel to the rim is the only ornamentation. The rim is square in cross section. The vessel was originally fitted with a pedestal which, unfortunately, was broken off. This was not found.

Vessel 5 (398480) (Fig. 92 *b*) is a grit-tempered, oval bowl with gracefully flaring sides expanding from a base 2¼ inches in diameter. The height at each end of the bowl is 3 inches while at the side it is 2¼ inches. The opening is an oval 5½ inches by 7¾ inches. The sides are $\frac{1}{16}$ inch thick and black in color both inside and out. Surface treatment is fine cord markings, with an incised scroll design within which the cord markings are erased. Small, plain knobs at the center of each side and end are located at the rim level. An incised line parallel and immediately adjacent to the rim completes the ornamentation. The rim is notched, thickened and slants slightly inward. The notches, 7 per inch, are located on the exterior edge of the rim only.

Vessel 6 (398481) is a grit-tempered cylindrical vase with flaring upper portion. The over-all height is 10½ inches with an orifice 12 inches in diameter. The base is entirely plain and is 4 inches in diameter. The sides are $\frac{1}{16}$ inch thick, and exterior colors range from red, through yellow, buff, brown to black, while interior colors are buff, brown, and black. Surface treatment is plain, but shows marks of vertical scraping. A band of incised design 3 inches wide circles the vessel 1⅞ inches below the flare of the rim. The pattern is a large chevron, shown in Figure 93. The rim is thickened, excurvate, and round in cross section. Paired, parallel ridges 1 inch apart, ¼ inch wide, and ¼ inch high cross the rim at right angles at 2 points opposite one another.

Vessel 7 (398482) (Fig. 94) is an excellent example of Omori type of pottery. The grit-tempered vase is 11½ inches high, with an 8-inch opening measured between opposing "ears." The vessel has 4 conspicuous "ears" at opposing sides (one "ear" not recovered). These "ears" are 3 inches high and come to a point forming an angle of about 40°. The walls are $\frac{3}{16}$ inch thick and are buff and black. The base is plain and 4 inches in diameter. Surface treatment is plain, but shows vertical scraping marks. Design consists of a large chevron design similar to that on Vessel 6. The rim is thickened and slants outward. It is rounded and excurvate in cross section. The pointed "ears" show the same cross section.

Vessel 8 (398483) is a small, grit-tempered bowl with a rounded bottom. It is 2¾ inches high with a 5¼-inch orifice. The base is cord marked, enclosed by an incised line, and is 3 inches in diameter. The walls are ¼ inch thick and are black in color throughout. The surface is finely cord marked with a band 1 inch wide, 2 inches from the rim, within which the cord marks are rubbed out. Three incised lines parallel to the rim complete the decoration. The rim is round in cross section and is slightly incurvate.

Vessel 9 (398484) (Fig. 92 *a*) is an incomplete and nonrestorable bowl which had apparently once been a straight-sided vase with the neck slightly constricted 3½ inches from the rim. The rim and body sherds recovered indicate a vessel 5¼ inches in diameter at the top, but of an undeterminable height and basal type and diameter. The grit-tempered sherds, ¼ inch thick, are buff and brown in color on both sides. Surface treatment was originally coarse cord marks, but most of the cord markings have been erased outside of the incised design which covers most of the upper portion of the vessel. Small punctate marks are found on the neck, spaced 5 per inch. The rim is thickened and notched on its outer edge, while the top of the rim slopes toward the center of the vessel. A perforation, apparently for support, is found on one side, but the corresponding point opposite is missing.

Vessel 10 (398485) is an incomplete and nonrestorable, grit-tempered "plate" originally fitted with a pedestal. The exact shape and size is now indeterminate. The ware is $\frac{5}{16}$ inch thick and is red, buff, and brown in color. The surface is smooth, but covered with shallow incised lines circling the vessel adjacent to the pedestal "scar." The upper, or rim portion of the plate is missing.

Miscellaneous sherds from the test squares were plentiful and show the following traits: Vessels were of many shapes — straight-sided vases, simple bowls, cups, cylindrical vases with flaring mouths, simple plates, and oval bowls and plates. Curvatures of sherds indicate oral diameters of from 5 to 14 inches with basal diameters from 1½ inches to 3 inches. Thickness of sherds ranges from ¼ to ½ inch with the majority nearer ⅜ inch. All sherds are grit tempered. All basal sherds found are plain. Colors, both interior and exterior, range from red, through yellow, buff, brown, and gray to black. Smoke-blackening was not observed on any sherds. Surface treatment is plain, incised on plain, fully cord marked, or cord marked erased from either within or outside of incised designs. Incising was apparently done with both pointed and blunt instruments. Incised designs are plentiful and include sweeping arcs, diamond shaped squares, random parallel lines, entire body covered with blunt-instrument incisings, and many combinations used with cord markings, knobs, sculpturing, and pinching. Many instances of incised lines over cord markings are noted. Rims are varied in their treatment and include: variations in cross sections, pointed and rounded castellations, incised designs on inner surfaces of rims, grooved rim tops, notched and punctate rim tops, and massively sculptured ornaments. Appendages include pedestals, lug handles, perforations for support, and vertical strap handles. Figure 95 illustrates miscellaneous sherds from Okubo.

Bone implements found are few in number, but of sufficient diversity to indicate the wide range of uses to which bone was put. They are as follows:

Bead, made by perforating a fish vertebra

Arrowpoint, bone (398495) (Fig. 90 *c*)

Arrowpoint, antler, broken

Fish hook, bone, broken (398496) 1 by ¾ inches (Fig. 90 *d*)

Knife, made from boar's tusk split lengthwise (Fig. 90 *f*)

Awl, or reamer, made from boar's tusk (398494) (Fig. 90 *g*)

Awl, bone, cylindrical (398498) (Fig. 90 *h*)

Proximal end of bone awl or chipping tool (398493) (Fig. 90 *i*)

Seal rib, stained by ocher (398499)

Antler fragments, showing cutting marks (398500)

Notched and ocher-stained piece of bone (398499)

Other artifacts from the excavations are:

Ear plug, clay (398502) (Fig. 89 *d*)

2 netsinkers, made from notched sherds (398491) (Fig. 89 *e*)

1 problematical object made from a smoothed sherd (398491)

Poll end of celt, made from pale green metamorphic rock (398504)

Pestle, broken (398505)

Spherical stone, possibly a mano (398505)

Several cylindrical stones, possibly phallic symbols (398505)

Pitted stone, small

Rubbed pumice fragments

Shell bracelet fragment (398501)

Clam shell fragments, stained by ocher (398499)

Surface artifacts collected from the site consist of the following:

1 flint arrowpoint, perfect (398503)

1 arrowpoint, broken (398503)

2 broken celts (gift from local collector) (398504)

Head of a clay figurine 1$\frac{11}{16}$ by 2¼ inches (398492)

Samya Shell Field

At Iitomi, Negata-mura, approximately 5 miles northeast of Kisarazu City, Chiba Prefecture, Honshu, and lying on the north side of the Obitsu River is a large, fairly level plateau. The plateau is about 125 feet above the level of Tokyo Bay, of which the Obitsu River was formerly an estuary. This plateau is much dissected by small streams flowing southward into the Obitsu River or westward into Tokyo Bay. On almost every acre can be found fragments of pottery dating both from the prehistoric Jomon period and the protohistoric and historic Yayoi and Haji periods. Also many mounds of various sizes are scattered about the plateau. Some of these have been excavated, and many have been obliterated by farmers, anxious to cultivate the land on which the mounds stood. From one point near the Samya shell field, to be described presently, at least 7 mounds are visible at one time. Farmers who work the fields report that they find pottery, iron fragments, and sometimes stone beads in the mounds and in the soil where mounds formerly stood. This coincides with the cultural material commonly found by excavators of Kofun period mounds.

At one point on a slight rise of the plateau, near the head of a ravine which runs abruptly down to a large artificial lake, Kami-ike, lies a shell field of about 3 acres. This site lies ½ mile due north of the village

of Ushiku and 1 mile south of the village of Samusawa, and is under cultivation. Shells outcrop at dozens of points, while potsherds, animal bones, flint chips, and an occasional implement literally cover the ground between and around the shell areas. Farmers who have worked the site for years report the plowing up of many fine specimens, including intact cups. No burials have been observed, however. A sample collection was made from the surface of the site, and a 5-foot test square was dug to hardpan in one of the shell outcrops. The pottery was representative of the Later Jomon period, with a predominance of the earlier (Horinouchi) wares of the period. The test square showed a topsoil of mixed earth and shells 8 inches thick, beneath which was a layer of clean shells, which lay directly on the sandy subsoil. The layer of clean shells was 14 inches thick and contained animal bones and sherds. The top 2 or 3 inches of the subsoil contained shells in varying proportions, while beneath this the sand was sterile. No heartths, pits, or postmolds were met in the test square. The square yielded 2 restorable pottery vessels and many unmatched sherds.

Surface pottery represented the Later Jomon period and, in addition, a few sherds from the Yayoi and Haji periods were observed. No Sueki sherds were found. From the surface finds, the following pottery traits could be determined: Later Jomon vessels were made of grit-tempered clay with varying degrees of hardness. Vessel shapes are flat-bottomed bowls and cylindrical vases with flaring rims. Basal sherds are plain or show impressions of bamboo matting. Colors range from red, yellow, buff, brown to black. Surface treatment is predominantly plain with some cord-impressed designs within incised lines. Others are cord impressed over-all, while others show striations caused by scraping the clay vessel before baking. Designs consist of scrolls and bands of cord markings within incised areas, and in some instances designs incised over the cord-marked surface. Rim knobs, perforations, and bands around the neck parallel to the rim complete the designs. Appendages such as strap handles, rim knobs, and lugs are quite ornamental and elaborate. In one instance a lug bears a caricature of the human face.

The Haji-period pottery is similar to that found so plentifully at Ogawara Site 3, Aomori Prefecture. One fragment of a 3-holed pedestal of a Yayoi-period vase is also a surface find from this shellheap.

A perfect celt, 2½ inches long and with a blade 1½ inches wide, made from a green basalt was found on the surface (398510) (Fig. 89 *b*).

Vessels found in the test square show the following traits: Vessel 1 (398506) is a grit-tempered bowl with a flat bottom. The ware is poorly fired, resulting in a gritty and friable finished ware. The over-all height of the bowl is 6½ inches, with a diameter at the mouth of 10¾ inches, and a basal diameter of 3¾ inches. Thickness of the ware is ⅜ inch and color is red and buff on exterior surfaces and red, buff, and black interiorly. Surface treatment is entirely plain. Design consists of 2 incised lines parellel to the rim on the inside of the flaring rim. Vessel 2 (398508) is a small, grit-tempered bowl 1¼ inches high, 5 inches in diameter at the mouth, and 2¼ inches in diameter at the base. Thickness of sides is $\frac{1}{16}$ inch and colors are red outside and mottled red, yellow, buff, brown, and black inside. Surface treatment consists of fine cord markings rubbed out inside incised lines. The rim is round in cross section and slightly incurvate. Miscellaneous sherds found in the test square are the same as those found so plentifully on the surface. No other artifacts were found.

Summary

No comment is necessary regarding the finds described in this paper, since they merely enlarge upon or corroborate the descriptions of the cultures found in Groot's monograph. The only exception is the Miyano cave-tomb, which represents the Kofun period of Japanese history. Considerable information on this culture can be found in Munro's *Prehistoric Japan*.

Conclusions

The descriptions of the archaeological sites and excavations contained in the 3 papers, of which the present article is the third, form an original contribution to our knowledge of the prehistory of Japan. While admittedly not definitive in their scope, they should serve to fill in some of the details necessarily omitted in such comprehensive works as that of Father Groot. The northern portions of Japan have not been as thoroughly studied by Japanese archaeologists as the areas nearer to Tokyo, and therefore Father Groot's conclusions as to the northern regions are less reliable than for those further south. This particularly applies to the Haji-period sites, which had never previously been so extensively investigated. Reporting the Jomon-period sites explored in Aomori, Miyagi, and Chiba prefectures serves to increase the number of sites already known to Japanese archaeologists and to extend the known distribution of the various pottery types. While these benefits are important, the writer expects that still greater advantages will accrue to science as more and more students are induced to enter the field of Japanese archaeology.

Laurel, Md.

June, 1954

CHRONOLOGY AND CULTURE SUCCESSION IN THE NORTHERN KURILES

CHESTER S. CHARD

IN RECENT YEARS the Okhotsk Sea region has become of increasing interest to students of New World cultural origins and relationships, particularly with regard to the problem of the Aleutians as a diffusion channel. But any real attack on this problem has been hampered by the gross inadequacy of the data. The few available sources in western languages are far from satisfactory; and attempts to augment these by utilizing illustrations from Japanese publications, divorced from the explanatory text, are fraught with danger.

The writer has therefore undertaken a systematic survey of the rather considerable field work done in this region by Japanese archaeologists in prewar years.* Reports on this have been published exclusively in the Japanese language, which has placed them effectively beyond the reach of American archaeologists, although certain ones have been cited in American works for their illustrations. The majority, however, are not generally known, and in some cases are not known at all. As much of this region has passed under Soviet rule since the war, further field work is unlikely. And as the major collections were apparently destroyed in the bombing of Tokyo, these published materials assume even greater importance and deserve maximum utilization.

The following initial report on this survey deals with an area of particular interest, and one which, happily, is well studied — the northern Kurile Islands. By this we mean the islands of Shumushu and Paramushiro, with their small satellites Araito and Shirinki, which form a natural as well as administrative unit separated by Onnekotan Strait from the rest of the Kurile chain. Between 1933 and 1938 Osamu Baba made 5 field trips to this area, excavating some 60 house pits as well as digging into a number of shell middens to a greater or lesser extent. The bulk of this work was carried out on the small island of Shumushu, which lies nearest to Kamchatka, with the balance on its much larger neighbor Paramushiro. The only other investigation of any consequence in this area was by Torii in 1899, but his data are of little assistance in solving the problems with which this paper is concerned. Unless otherwise indicated, therefore, our source is Baba's final report on the work (Baba 1939).

A detailed summary of the excavations and description of the archaeological materials is reserved for a more extended paper. Here our task will be limited to examining the evidence indicating cultural succession in this region and endeavoring to date the remains, plus some consideration of the significance this may have for adjoining areas, particularly Kamchatka and the Aleutians.

Fortunately, the limited space favorable for settlement on these islands has produced a concentration of archaeological remains of every age in close propinquity, thus facilitating comparisons. Also, since Shumushu was the home of the last surviving Ainu inhabitants of the Kurile chain (removed by the Japanese in 1884 to a southern "reservation"), we have an opportunity to apply the direct historical approach.

Baba excavated some of the ruined semisubterranean dwellings known to have been occupied in 1884, as well as others resembling them, and thus gained a good idea of the final stage of northern Kurile Ainu culture, that pertaining to the period of Russian administration, or what I propose to call "the historic period."

The pit dwellings of this period were mostly multiroom structures. The ethnographic dumbbell shape illustrated by Torii (1919: 237) may be considered the standard type, but elaborate 4-room arrangements with connecting passageways were not uncommon. The square rooms still retained their shape distinctly, and the pits were relatively deep. Many had their external embankments intact. Posts in some were well preserved. The construction consisted of 4 main supports, one in each corner, with a smaller post between them on each side. Stone fireplaces evidently modeled after the Russian stove were usually found. Entrance was by a passage. There was much evidence of use of ship timbers from wrecks, and instances of

* The assistance of the Wenner-Gren Foundation for Anthropological Research, Inc., in launching this survey is gratefully acknowledged.

plank floors and walls were observed, as well as doors. The structures corresponded well with the written descriptions of the last half of the 19th century. Several rooms were obviously sweat baths, a Russian introduction.

Considerable material was recovered from these dwellings and especially from middens associated with them. It was overwhelmingly of foreign origin. Fragments of porcelain and glass occurred in greatest quantity, especially "Holland porcelain" of English manufacture, followed by Russian. Chinese or Japanese wares were rare. Glass and porcelain beads were common, almost all identified as European, as was also the case with the great variety of metal objects. In addition, there was much salvage metal from wrecks, and some local forging of this into harpoons, fish spears, and fish hooks, but no other working of metal. The uniformity of much of this foreign material from site to site indicates importation in considerable quantities, and suggests that most of it may be post-1830, when the Russian-American Company established a post here. Some native manufactures survived, however, especially bone artifacts. Though limited in number and variety, the latter showed great complexity of workmanship owing to the availability of metal tools. Elaborately carved combs and sash clips are outstanding, along with many other ornamental objects. Both horizontal and vertical combs are found. Decorated tubular bone needle cases are very common. Bone arrowpoints are identical with those of the modern Kurile Ainu; some have a hole for poison. A number of sets of whalebone sled runners came to light.

Stone was still in limited use. Adzes, arrowpoints, and other artifacts not described in detail were encountered not infrequently. Peculiar square chipped objects of unknown use were distinctive and unique, being confined to this period only and apparently unknown elsewhere in the realm of Japanese archaeology (Baba 1939, Pl. 61; ½ size).

Despite the evident preference for imported metal containers, fragments of a considerable number of indigenous pots were found. (It should be recalled that the memory of pottery making still persisted in Torii's time). All of these were of a single type having inside lugs or "ears," the so-called "Naiji" ware. One vessel found intact showed a cylindrical body and base that was probably imitated from a copper pot, unlike the typical basin-like form which the Naiji pottery assumes elsewhere in the Ainu area.

In the same general areas were remains of pit dwellings of different form from the historic ones. These were single-room structures. Many, arranged in definite settlement patterns, but less deep and distinct in outline than the preceding, proved on excavation to be rounded squares or rectangles with a short (1.5 m.) entrance passage usually placed in the middle of the side facing the water. Although the post arrangement, where it could be seen, appeared in most cases similar to the historic, there was no trace of a stone fireplace. Instead, a peculiar "paving" of small stones was usually encountered near the entrance. But leaving aside the weathered appearance of the pits and the absence of any indication of shipwreck materials, the most striking contrast lay in the material found in them. With the exception of some glass beads in one dwelling, no European objects of any sort were uncovered. This same dwelling and one other revealed traces of an iron object; and a comparable pit on Paramushiro yielded a Japanese coin of the Kan-ei era (1624-1643). Two iron pots with inside ears of the sort believed to have been the prototype for the Naiji pottery were dug up in the vicinity of yet another pit of this type, but I would not accept the association in this case as indubitable, although it is not improbable. This exhausts the contact material, although a number of the stone knives impressed Baba as being modeled after metal forms. The picture suggests limited diffusion of articles from Japan — which agrees with our earliest accounts of the Kuriles — plus the very first signs of Russian arrival in the general region. We have thus clearly pushed back into another period which we may fairly label "protohistoric."

Examination of the cultural inventory yielded by these protohistoric pit dwellings indicates, however, a close relationship and continuity with the surviving aboriginal industry in the historic period. This is most evident in the pottery, which is entirely of Naiji type, though in its "pure" form. All the bone and stone artifacts of the historic sites resemble in general and often in detail their protohistoric counterparts, with the sole exception of the enigmatic square chipped objects previously mentioned.

Included in the inventory are barbed bone points for fish spears, tubular needle cases (undecorated here), vertical combs (no horizontal ones in protohistoric), bone adzes or wedges with circular pits, polished stone adzes with tapered butt and somewhat triangular cross section, and small sadiron lamps pierced for a stand.

Everything suggests that the occupants of the single-room pit dwellings with Naiji pottery were the immediate predecessors of the historic population of the northern Kuriles. It is also reasonable to suppose that the first Russian contact occurred sometime during this protohistoric period, probably in the latter part. For Shumushu this date is 1711; for Paramushiro, 1713. This would mean that the earliest Russian accounts of the Kuriles refer to the culture and people of this protohistoric period, which must have lasted until the establishment of permanent Russian occupation somewhat later in the 18th century. The people described in these accounts are unmistakably Ainu in type and culture, confirming what could justifiably be deduced from the archaeological materials alone.

As to how early this protohistoric period might have begun, the answer would hinge on the earliest date for Naiji pottery in northern Japan, where the ware is regarded as very late. We cannot allow too many centuries before 1711, therefore. In the case of one site, coin dating would allow us to go back perhaps to the 1630's, but there is no reason to suppose that this is necessarily the oldest site in the area.

Eliminating all the pits that can definitely be assigned to the historic or protohistoric periods, a certain number are still left. These are round or oblong in appearance with, in general, no trace of an entrance passage. They are very shallow in comparison with the others and are often scarcely recognizable. Rather than being crowded into large patterned settlements, they are more scattered, with from several to a score forming a loose community.

Excavation revealed the remains of squarish structures whose original outlines had been obliterated by weathering. Postholes were identified in a number of them, but no regular pattern could be discerned, so that it is difficult to deduce the construction. A few proved to have recognizable entrance passages. A typical feature of these pits was the conspicuous stone fireplace, situated near the wall in which the entrance (or presumed entrance) was located. Many also had large "place lamps" of hollowed natural stones on the floor, reminiscent of those found in the Aleutians. Only one small lamp was recovered (from a shellheap) and this was circular.

These sites contained no trace of European objects or indeed of any trade items or metal. Nor did they contain any Naiji pottery. Instead, the only ware was of a totally different and technically superior type known in northernmost Japan as "Okhotsk pottery." The rest of the inventory displays for the most part marked differences with the tradition of the 2 later periods. Only a single specimen of the tapered, triangular stone adze occurred, as against some 20 of a very different type, relatively flat-bodied or somewhat oval in section. The stone knives could not be considered imitations of metal. Other distinctive items were grooved and pierced stones, stone beads, bone animal carvings, a bone wedge with protuberances unlike the later type, fox teeth drilled for suspension as ornaments, compound fish hooks of bone (3 types), and several varieties of fish spear. The contrast was probably most striking with regard to toggle harpoon types and bone arrowpoints.

Obviously, we are dealing with a very different culture. There are no indications of any contact between this and the protohistoric-historic culture. It is clearly a separate occupation, as is suggested by several inconclusive instances of stratigraphy. In one such case, a midden consisted of 2 distinct strata of shells separated by a layer of black soil. The lower level contained artifacts normally associated with the Okhotsk pottery; the upper shell layer unfortunately contained only animal bones. Again, 2 pits of this type proved to contain stone features at a level 20 to 30 cm. above the floor of the dwelling, but well below the present surface. There were no other cultural remains associated. But at least an appreciable lapse of time is suggested between this and some phase of later occupation.

The absence of any trade articles, the weathered appearance of the sites, and the close continuity between the 2 other culture stages, plus their contrast to this one, all make it evident that the third group of sites is definitely older than the rest, and justify us in labeling the stage "prehistoric." It not only clearly

antedates the oldest protohistoric remains, but there is at least a suggestion of a time interval between the 2 occupations. The end of the prehistoric may thus antedate rather than coincide with the start of the protohistoric. As to when this occupation first began, and its duration, we must again turn to better-documented areas to the south whence this culture, like its successors, obviously came.

The Okhotsk pottery culture is distributed around the southern rim of the Okhotsk Sea: on the shores of south Sakhalin, northern Hokkaido, and the Kurile Islands. It is a strictly maritime manifestation. Type site is the Moyoro midden at Abashiri in Hokkaido. Nothing has been published to date in English on this culture. Groot (1951) barely mentions its existence. However, a descriptive paper by H. A. MacCord and S. Kodama was read at the May, 1954, meeting of the Society for American Archaeology. According to them, the Okhotsk Culture in Hokkaido is protohistoric and tentatively dated at around A.D. 1000 at its centers there. It must be somewhat later than this in the northern Kuriles. At any rate, it is unlikely that any archaeological remains now known from Shumushu and Paramushiro antedate A.D. 1000.

Baba specifically and carefully searched for traces of Jomon pottery, which precedes the Okhotsk elsewhere in the area of the latter culture, but in vain.

Assuming, therefore, that the Okhotsk represents the earliest human occupation of the islands, this effectually blocks any greater antiquity for a circumpacific culture drift or similar movement in which the northern Kuriles are presumed to have played an active role. Of course it is not inconceivable that the islands were by-passed or that groups may have passed through or even briefly occupied the islands without having dug any pit houses or piled up any shell middens. In this case, such remains as they might have left could quite possibly escape even the intensive activities of the indefatigable Baba. Unfortunately, the prospects for any additional investigations are extremely remote. Soviet archaeologists have their hands full nearer home with more important matters. So we shall have to rest with the present situation as revealed by Baba's work.

Mention should be made of a few finds that do not fit into the above scheme. All of them are, unfortunately, fortuitous and undocumented. Here belong the 3 stone labrets, 2 from Kataoka on Shumushu, 1 from Paramushiro; also the human crania unearthed at the Hakama Fisheries station on Cape Murakami, Shumushu, which are alleged to display some characteristics reminiscent of the Aleut. In this conection we must bear in mind that the Russian-American Company established colonies of Aleut sea-otter hunters in the central Kuriles on the islands of Uruppu and Shimushiru. There is conflicting evidence as to whether or not they were ever settled on Shumushu. At any rate, Baba was well aware of these facts, and states that in all his intensive work on Shumushu he found no trace of these Aleuts or anything that could be attributed to them. He suspends judgment on the labrets and the "Aleut" crania, and we must regretfully follow suit.

Let us now briefly consider some of the wider relationships of the cultural stages we have delimited in the northern Kuriles. Both the prehistoric (Okhotsk pottery) and protohistoric (Naiji pottery) periods represent cultures which are distributed around the southern rim of the Okhotsk Sea and which may be presumed to have spread to Shumushu and Paramushiro from Hokkaido or the southern Kuriles. The question of their ultimate origin and of their development in the latter region is beyond the scope of this paper.

Turning our attention northward, and seeing the scant few miles that separate Shumushu from the southern tip of Kamchatka (Cape Lopatka), it seems hard to believe that considerable contact did not inevitably occur. And for the protohistoric period, there is ample evidence that it did. Indeed, everything indicates that our Naiji-pottery-using Kurilians took possession of the southern end of Kamchatka for a while at least. As for the prehistoric period, the finding of reindeer antlers in the Shumushu middens proves that hunting trips at least were undertaken on the mainland. However, no Okhotsk pottery has yet been discovered there, or other conclusive evidence of actual settlement. It is true that this part of Kamchatka is only scantily known archaeologically; still, if the protohistoric invasion is

so amply documented, it would seem strange that no evidence of a comparable earlier occupation has come to light.

Jochelson's sites around Kuril Lake in southernmost Kamchatka (Jochelson 1928: 58-64) correspond closely in appearance, condition, and contents with those of the protohistoric stage on Shumushu. Both contain Naiji pottery, sadiron lamps (some pierced for a handle), types of bone points and carved brooches typical of the Kurile Ainu, metal implements, and occasional Japanese trade objects. Dune sites at Cape Lopatka reported by Rudenko (1948: 162-3) corroborate this picture. Close contact between the northern islands and the mainland is attested by the earliest Russian accounts. There is every ground for regarding the Kuril Lake sites as contemporary with their counterparts on Shumushu, or, in other words, as protohistoric. Jochelson (1928: 37), as is well known by now, attributed far greater antiquity to these sites on the basis of Japanese coins alleged to date from the 11th century, and all subsequent thinking about Kamchatka has been colored accordingly. Oswalt (1953) is to be credited with correcting this erroneous impression as far as western readers are concerned. It is highly probable that Jochelson's coins were the same Kan-ei era coppers (1624-1643) found by Baba in a similar site on Paramushiro.

Naiji pottery has, in addition, been found in several places on the southeastern coast of Kamchatka, and it is likely that the wide-ranging sea rovers from the Kuriles exerted varying degrees of influence up and down this coast in protohistoric times.

When we turn eastward to the relatively distant and inaccessible Aleutian Islands the problem is not so simple. Even though we exclude from consideration the ambiguous labrets and crania, we are left with certain similarities, some specific, some of a more general nature. It is easy to let these lead us too far, however. When one views the archaeological assemblages of both regions as totalities, the over-all picture actually shows little in common. For instance, toggle harpoons were unimportant in the Aleutians, as was the bow; whereas on the Kuriles, toggle heads are a major element and arrowpoints the commonest stone artifact. Conversely, there is a complete absence of polished slate in general and the ulu in particular on the Kuriles. Sea mammal skulls are found in enormous quantities in Kurile sites but never, apparently, in the Aleutians, where different practices prevailed. Above all, pottery is prominent in all stages on the Kuriles, while nothing comparable is known on the Aleutians. Here and there, we do find general resemblances: in the commonest compound fish hook, certain stone points, the use of large stone "place lamps." Aleutian toggle heads recall the Okhotsk in a very general way, but are utterly unlike the Naiji ones. More specific similarities can be seen in some (but by no means all) of the stone knives. One type of simple barbed harpoon of the Okhotsk culture is shared with the Aleutians, but the great majority are dissimilar.

With the possible exception of the asymetric stone knives and the "place lamps," I feel that the above resemblances can more reasonably be explained as an inheritance from a common substratum shared in by the ancestors of the Aleutian population before they left mainland Alaska, and by the maritime peoples of northeastern Asia. And I am left with the impression that more such Aleutian resemblances can be found in Kamchatka than in the Kuriles, which would be in line with this hypothesis.

The sadiron lamp and the so-called "hunters' lamp" (with pierced handle), because of their very limited distribution, do raise another problem. Both types are protohistoric in the Kuriles, and in Kamchatka have been found only in the similar sites at Kuril Lake, and at Kavran in the northwest, an obviously late site, despite Jochelson's contrary assertion (1928: 51), where they are associated with iron and Japanese porcelain. If the sadiron lamp diffused directly from the Aleutians, as Collins and Quimby believe (Quimby 1946), this contact must have occurred only a century or two before the Russian conquest of the area, unless the sadiron lamp existed in an earlier context on Kamchatka and was passed down to the Kurilians. But of this there is no present evidence. Therefore, if the "late" period in the Aleutians is to be dated on the basis of the Kamchatkan lamps as Quimby proposed, it must be very late indeed.

In sum, a comparison of the Aleutian-Kurilian artifact assemblage suggests, to me at any rate, the possibility of sporadic direct contacts at a very late date, and a certain common inheritance from a much more distant past.

The cultural picture on the northern Kuriles as revealed by Baba's work suggests certain general conclusions that affect current historical hypotheses in this part of the world. First, any circumpacific culture drift that includes the northern Kuriles and southernmost Kamchatka must be a very late phenomenon. Secondly, it is futile to look to the Kuriles for the antecedents of the Bering Sea Eskimo culture; any similarities to the latter in Kurilian material must represent a late backwash, either from north or south.

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UNIVERSITY OF WASHINGTON
Seattle, Wash.
January 1955

ANNUAL MEETING, 1956

The next annual meeting of the Society for American Archaeology will be held in Lincoln, Nebraska, at the University of Nebraska's Department of Anthropology, on May 3, 4, and 5, 1956. Members and others desiring to present papers at this meeting should submit the title and an abstract (1 page or less), with requests for necessary equipment such as projectors (give size of slides) to the Program Chairman, JOHN M. CORBETT, National Park Service, Department of the Interior, Washington 25, D.C., on or before February 15, 1956. Papers and talks will be limited to a presentation time of 20 minutes each.

ANNOUNCEMENT

The price of Memoir 10, *Mogollon Culture Prior to A.D. 1000*, by Joe Ben Wheat, has been reduced from $3.25 to $2.00. Orders should be sent as usual to the Society for American Archaeology, Logan Museum, Beloit College, Beloit, Wisconsin, with remittance included.

ARTHUR CASWELL PARKER — 1881-1955

On New Year's Day, 1955, after an eventful and fruitful life of 73 years, Arthur Caswell Parker died suddenly of a heart attack. Even on the final day of his life he had been busy about the delightful hilltop home overlooking Canandaigua Lake, where he and Mrs. Parker had spent his "active retirement" period since 1945, when he terminated a score of his most productive years as director of the Rochester Museum of Arts and Sciences. It was largely owing to his skillful planning and energetic accomplishment that the Rochester Museum developed from a small nucleus housed at Edgerton Park to its present impressive establishment on East Avenue and its general recognition among the museums of the country. This was the phase of his career best know to me because of my close association with him as his staff archaeologist.

His youth was passed on the Cattaraugus Indian Reservation, where he was born at Iroquois, N.Y., on April 5, 1881, the son of Frederick Ely and Geneva Griswold Parker. His paternal lineage included Seneca Indian ancestry; his grandfather, Nicholson H. Parker, a civil engineer and leading Seneca sachem, being a brother of Brigadier General Ely S. Parker, military secretary to General Grant in the Civil War, and Lewis Henry Morgan's principal informant on the Seneca.

Out of this nurtural background stemmed Arthur Parker's intimate and sympathetic understanding of the beliefs, customs, and problems of the contemporary Indian, which consistently characterized his whole life and was manifest in many

(Continued on next page)

directions, as in his service as secretary of the New York State Indian Commission (1919-22), his presidency of the New York State Indian Welfare Society, his active affiliation with the Society of American Indians and the Indian Rights Association, and his chairmanship of the Committee of 100 appointed in 1923 by the Secretary of the Interior to investigate prevailing conditions among the reservation groups.

This sense of kinship and deep concern probably also accounts for his preoccupation with the ancient beginnings and early history of the Iroquois, whom he has defended with the written and the spoken word. Yet, rather curiously, his formal education, taken at Dickinson Seminary, Williamsport, Pennsylvania, was in preparation for the ministry. The lure of "old, forgotten, far-off things," soon led him, however, into the anthropological fold, first as an archaeological assistant at the American Museum of Natural History (1900-03); and then (1903-04), in company with a like-minded young man, Mark R. Harrington, now Curator of the Southwest Museum, he performed his apprenticeship as a field archaeologist for the Peabody Museum of American Archaeology and Ethnology of Harvard University, under the stimulating direction of the erudite and dynamic Professor Frederick Ward Putnam.

In the latter year he came to Albany as ethnologist for the New York State Education Department and in the following year he was appointed the first full-time salaried archaeologist of the New York State Museum, a position he held until his acceptance of the Rochester Museum directorship in 1925. At the State Museum he accomplished his field work in Iroquoian ethnology and archaeology and wrote his major publications in these subjects. Among those of most enduring value are "Excavations in an Erie Indian Village and Burial Site at Ripley, Chautauqua County, New York" (1907); "Iroquois Uses of Maize and Other Food Plants" (1910); "The Code of Handsome Lake, the Seneca Prophet" (1912); and "The Constitution of the Five Nations" (1916).

Coincidental with this field work came the amassing of some of the chief collections of anthropological materials of the New York State Museum. Among his other accomplishments, during this highly creative interval, should be listed the still popular and treasured series of 6 full-scale Iroquoian life groups, the planning and construction supervision of which were his responsibility.

In 1916, in the same year he organized the still-thriving New York State Archeological Association, Parker was awarded the Cornplanter Medal of the Cayuga County Historical Society for his research in Iroquoian ethnology. The University of Rochester conferred an honorary M.S. degree in 1922, following publication of his "Archeological History of New York," the initial effort to classify the then known prehistoric cultures of the state.

The second major phase of his career began with his role of administrator at the embryonic Rochester Museum. Now his interest in the educational function of the museum, which he regarded as "the university of the common man," came to full heat. With characteristic vigor he undertook the difficult assignment of developing a small, obscure museum under public support, into a monumental institution dedicated, through a host of varied services, to the promotion and dissemination of knowledge.

With mounting success came more numerous tokens of recognition, in the form of academic honors and public acclaim. Union College conferred a doctorate in science (1940), and Keuka College bestowed upon him the degree of Doctor of Humane Letters (1943). In 1946 he received the Civic Medal of the City of Rochester and in the following year, the Citizenship Award of the Rochester Chapter, Sons of the American Revolution.

Still I have not exhausted the ledger of this multifaceted man. He stood at the top in Masonry, to the history of which he had contributed research and writings. He probed, also, into other historical domains, as attested by his well-received book entitled, *A Manual for History Museums* (1935). He authored a series of books for young people; he served in various capacities in historical, archaeological, Masonic, and civic organizations; he wrote voluminously, and lectured much to popular groups. In a word, he sought, and found, acclaim and distinction in a host of abiding services to his fellow man.

WILLIAM A. RITCHIE

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HENRY CLYDE SHETRONE — 1876–1954

My introduction to "Harry" Shetrone was an interview in the early spring of 1925, during my freshman year at Ohio State University. A professor of mechanical drawing suggested that if I desired outdoor work during the summer vacation, I should apply to Dr. Shetrone, then Curator of Archaeology at the Ohio State Museum. My only qualifications were camping experience, an inordinate desire to outwit any fresh water fish, and a strong back. This first interview never reached beyond the second qualification. At a subsequent meeting I was told to be at the museum soon after the close of school and to bring my fishing tackle. The work assignment, however, called upon all the muscles of my back in learning how to use the shovel and mattock during a 10-hour day.

Henry Clyde Shetrone was born August 10, 1876, and spent his early youth in Millersport, near Buckeye Lake, some thirty miles east of Columbus, Ohio. The proximity of Buckeye Lake must have influenced his adult fondness for small- and largemouthed bass. Attending Denison University, a few miles west of the famous prehistoric earthworks at Newark, Ohio, may have aroused the interest which eventually led him into his chosen field of archaeology. The anthropological careers

(Continued on next page)

of George A. Dorsey and Warren K. Moorehead, former students at Denison, certainly served as an inspiration, even though he could not foresee that he would follow so closely in the footsteps of the latter.

At the outbreak of the Spanish-American War he enlisted, at the age of 22, in the U.S. Volunteer Signal Corps. Just as the present generation of young men are intrigued with electronics, the young Shetrone mastered the relatively new medium of telegraphy. He returned to Columbus in 1903, where he served as press telegrapher, telegraph editor, financial editor, and feature writer on various newspapers.

During this period, Professor William C. Mills was excavating the Adena, Gartner, Edwin Harness, and Seip mounds for the Ohio State Museum. Shetrone found these excavations not only of interest to his newspaper, but they rekindled a dormant spark which so consumed him that he terminated his newspaper career, at the age of 37, and joined Professor Mills as his assistant at the Ohio State Museum in 1913.

One of his first tasks was a survey of petroglyphs, mounds, and village sites along the Ohio River. This led to a comprehensive tabulation of archaeological sites throughout the state, based on data accumulated over many years by such men as Whittlesey, Thomas, and Moorehead. Beginning in 1897 Mills conducted a systematic survey, county by county, which resulted in the now famous "Archeological Atlas of Ohio," published by the Society in 1914. Mills acknowledged his obligations to Shetrone for assembling the records of the 5396 sites.

Shetrone's first published contribution appeared in 1918, "The Indian in Ohio," and 2 years later he published "The Culture Problem in Ohio Archaeology." Shetrone was beginning to realize the significance of the prehistoric material within the state and of the need for a study of the chronology of the various prehistoric complexes in Ohio.

In 1921 Mills was made Director of the then Ohio State Archaeological and Historical Society, and his assistant, Shetrone, was promoted to Curator of Archaeology. By this time he was a skilled and competent field director. Mills had established an enviable record of publishing the results of his own and their combined research practically every year from 1902 to 1922. Archaeologists working in other parts of the Mississippi Valley, such as Barrett, Keyes, Hooton, Willoughby, Moorehead, Hinsdale, Parker, and Moore, soon realized that arbitrary state lines were of no significance to the prehistoric and historic Indian tribes. A serious attempt was being made to establish a nationwide chronology and to trace the various artifactual complexes beyond their state boundaries.

During the subsequent 6 years Shetrone directed and published the results of excavations at the Campbell Island village site, Hine Mound, Wright Mounds, Ginther Mound, Miesse Mound, the Hopewell group, and Seip Mound 1, formerly known as the Pricer Mound.

One Saturday afternoon in August, 1926, a most serious accident occurred which many of us thought would bring an untimely death to Shetrone. During this field season we had reached beyond the apex of the large Seip Mound, giving us a vertical face of some 30 feet near the center. Very few interments had been recovered. Our method of undercutting huge slabs of earth had been used on 2 levels, each about 15 feet in height. During the previous week a trench had been cut to pry off a large segment near the top of the mound. As it sometimes happened, nothing could budge it. Two nights previously it had rained, and water had settled in the prying trench. On this particular day a small grave was discovered on the hard packed floor.

Shetrone was anxious to remove the contents of the grave so as not to leave it exposed over the weekend. A lady and her daughter were sitting on a box a few feet behind us while Shetrone and I were cleaning out the powdery dust from the decomposed log timbers on either side of the burial platform. I had just come out of the burial arch when several tons of dirt from directly above crashed down. When I turned around there was nothing but a pile of dirt. The lady and her daughter were covered but soon removed, whereas we had no idea where to look for Shetrone. To dig with a shovel could cause additional injury, so 3 of us dug with our hands as rapidly as possible. We found him in a kneeling position, unconscious but breathing. When revived he felt no pain except in his foot. Subsequent X-rays at the Chillicothe hospital, however, made us realize

what a narrow escape he had. Fortunately he recovered, except for a slight limp, to contribute to American archaeology and serve the Ohio State Museum for an additional 27 years.

In 1928 Mills died and Shetrone was appointed Director of the Museum and Society. Even though administrative duties prevented him from actively participating in excavations, he never lost interest in archaeology. During his 18 years as Director he continued to publish archaeological papers, but on a wider scope. Two years after he assumed the Directorship of the Society, D. Appleton published his monumental book, *The Moundbuilders*. This beautifully illustrated synthesis served as one of the most important references for the prehistoric cultures of the eastern United States. He collaborated with the new Curator of Archaeology, E. F. Greenman, in the Seip Mound report. After the discovery of diagnostic projectile points associated with extinct animals, commonly known as the Folsom point, Shetrone in 1935 surveyed the large projectile point collections from Ohio in order to determine whether such points had been found associated with any of the mound cultures. These results were published in "The Folsom Phenomena as Seen in Ohio."

In order to carry forward the detailed analysis of stone objects and to learn something of the type of material used by the prehistoric Indians, Shetrone organized a Lithic Laboratory for the Eastern United States. To familiarize himself with the problems, he visited England, where he studied and photographed the obsolescent art of flint-knapping at Brandon, Suffolk. From here he journeyed to Paris, participating in a field trip with the American School of Prehistoric Research. Then he went to the south of France to view the famous classical cave paintings at Les Eyzies in the Dordogne. Upon his return, the Lithic Laboratory was established in 1938.

In 1944 he spent 3 months in Arizona studying prehistoric irrigation systems along the Salt and Gila River valleys. An account of this was published as an appendix in the 1945 Annual Report of the Smithsonian Institution.

During his lifetime he was awarded an honorary Master of Arts from Ohio University, and from his alma mater, Denison University, an honorary Doctor of Science. He was elected a Fellow in the American Association for the Advancement of Science and the American Anthropological Association. He served as President of the Ohio Academy of Science, was a member of Sigma Xi, and a Council member of the American Association of Museums.

Here then was a man with a college background acquired during the 1890's, who served in the Spanish-American War, and then, after 10 years of newspaper work, began a scientific career in archaeology at the age of 37. His instinct for newsworthy items stood him in good stead. To obtain the funds to carry forward his excavations and museum projects, he diplomatically cajoled state legislative bodies and businessmen. After his retirement in 1946 he was appointed Director Emeritus, a position he held until his death, November 23, 1954. He was available at all times to assist the Society to which he had been so passionately devoted for 33 years.

Retirement provided the leisure he deserved. Several winters were spent in Florida, where he became interested in a phase of marine life, conchology. He assembled and identified a large collection of marine and fresh water shells similar to those used by the prehistoric Indians.

The results of his 15 years of active archaeological field work and 18 years as Director of the Ohio State Museum are manifest. During this time a new wing was added to the Museum, and the reputation of the Society has been greatly enhanced, in the field of archaeology, in its emphasis on historical houses and properties, and as a museum. Such an impressive contribution is due to the driving force and zeal of Henry Clyde Shetrone.

FRANK M. SETZLER.

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FACTS AND COMMENTS

THE "STONE SCRAPER" AND ARROW "WRENCH"

Nearly all the artifacts used by prehistoric peoples of the Southwest have been carefully considered, their use determined, in many cases reproduced, and the duplicates found serviceable for the purpose indicated. Replicas of stone axes, textiles, and pottery have been made by ancient methods. There is one exception, however. The tools of the bow and arrow maker have been taken more or less for granted, and after being named by somebody, simply left that way. The projectile point is the only such artifact that has been copied and used.

Having had long experience in the making and shooting of bows and arrows, I am naturally interested in all archaeological finds of that nature. More than that, these finds have been more or less of a challenge. Just how would a workman used to modern tools and machines proceed with only stone and bone as adjuncts to arrow making? The careful observations of Doctor Saxton Pope (1923) from his association with the Yahi Indian, Ishi, were of some help, as were my own rather scanty mental notes on Pima, Apache, and Papago workmen of modern times. However, the actual making of bows and arrows with duplicates of prehistoric tools has been interesting and rewarding. My own skill with such tools must be pitiful indeed as compared to that of the ancients, since they undoubtedly used teeth, toes, and legs, as well as hands in their work.

One interesting discovery was the probable use of the arrow "scraper." This artifact is generally a flat piece of chert in which a semicircular notch has been chipped (Fig. 96). I found this to be of no use whatever as a scraper.

I have long ago tried similar scrapers of steel and discarded them. The stone scraper was much worse—nothing in fact, but a clumsy nuisance. However, in cutting reed cane for arrowshafts the stone scraper was a revelation. It made an excellent saw. By rolling the cane on the thigh and pressing the notched portion against it, I found it possible to do a very neat job of cutting. The chipped edge acted as sawteeth and the work was rapid and neat. Any projecting fiber left from the cut was removed by touching it to a live ember. While I am satisfied in my own mind as to the use of the stone "scraper," I prefer to leave the matter of future nomenclature to others; arrowshaft cutter would obviously be simple, adequate, and proper.

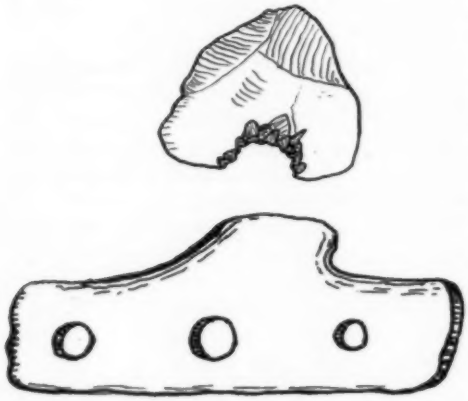

FIG. 96. *Upper,* Hohokam arrow "scraper;" *lower,* Salado arrow "wrench" made of antler.

When the arrow was first used as a projectile its users must have found that all the arrows in a quiver should be exactly alike. They should be of the same length and stiffness and of the same diameter. This is obvious. Uniformity of flight could never be otherwise achieved. Since all the canes selected would be of the same species of wood, the matter of weight and stiffness would be largely solved. Diameter, however, will affect both these other factors, and selection of canes of the same diameters would require some device for measuring, other than by the eye or the feel in the hand.

The arrow wrench (Fig. 96) fills the requirement for some type of gauge more nearly than any artifact so far found. In my own work I have used a steel plate in which holes of various sizes had been drilled. I have seen these in almost every archery shop I ever visited. This is the only method of accurately and quickly gauging the size of a wooden rod. Confronted with a heap of canes from which one would wish to select arrowshafts of the same diameter, it would be almost a subconscious act to fit them to a gauging hole of the required size, selecting those shafts that entered without clearance.

At one time I was almost certain that the arrow wrench was used as a gauge only. I could hardly believe that such a weak and apparently inefficient tool was ever used for straightening arrows, but Shoshone use of a straightener shows the shaft was inserted in one of the holes (Mason 1905: 92), then heated, and the wrench used as a bending lever. There must have been a reason why an arrowshaft was bent by means of a hole in a bone rather than simply bent by the pressure of the fingers.

In a former paper (Cosner 1951) it was set forth that certain fiber distortion occurs when wood is bent by heat: namely, that the fibers on the inside of the bending arc would microscopically resemble a short string with pressure applied at each end toward the middle. The resulting fiber formation would then resemble the letter "S" or "Z." While the method is not much used commercially, it is well known that if the wood is bent over a curved surface which presents a number of transverse ridges, the pressure of these ridges will assist in fiber distortion. This tends to relieve shear as well as to relieve tension on the outer surface of the member.

Any archer who has straightened arrows by heat and force applied with the hands, knows that an increase of atmospheric humidity will cause them to resume their former crooked condition. This is undoubtedly caused by lack of sufficient fiber distortion. The ancients somehow found that the distortion caused by pressure at the edges of the holes in their piece of bone or antler, would, when leverage was applied, make the bending permanent. My own experiments proved the fact beyond doubt. I must add that no modern has to my knowledge, used this method. Perhaps a review of ancient processes might assist us in our search for better methods.

Evidence is also at hand to show that the arrow wrench was used as a burnisher. Experiment determined that this use must be correct and feasible. Other methods were as good or better, but it must be remembered that the arrow wrench was seldom more than 8 inches long and therefore portable, and it eliminated a number of tools to be cared for. Burnishing was obviously accomplished by rapid friction through one of the holes.

Another important use for the arrow wrench was as a clamp for the hollow tip of the shaft that was to receive the foreshaft or footing. In the case of solid shafts the end was first drilled to a short depth to receive the tenon, but in the use of *Phragmites communis* (common reed) this was not necessary. In use the shaft was inserted in the hole, which fitted it snugly, having been the gauge by which it was selected in the first place. The tenon of the foreshaft was then heated and resin applied and it could be forced into the shaft without fear of splitting. After further smoothing the juncture was then bound with sinew. I have experimented with the wrench as a clamp as against a few wraps with a cord, which had seemed to me to be both more simple and rapid. The bone wrench was far better on both counts.

Since the arrow wrench had a multiciplity of uses and was almost half the ancient worker's shop, as it were, its nomenclature is rather vague. It was not a wrench at all in the modern acceptance of the term. It was a clamp, a burnisher, and a gauge, as well as a lever for applying suitable pressure, but it was not used for a twisting strain in our definition of "wrench." Still, any change of name would cause too much confusion now.

During the past 2 years I have been on the alert for more tools that are purported to have been used for prehistoric archery. No more have come to light. Suddenly it became clear to me that no more were necessary. For hollow shafts there were 4: (1) the grooved stone straightener, (2) the grooved sandstone smoother, (3) the arrow wrench, and (4) the saw. For solid shafts, the drill would be added to make the mortise for the foreshaft, totaling in that case 5. I do not class the simple scraper and knife as specialized inasmuch as they were procurable anywhere. It is a fact that few modern cabinet makers have the skill to sharpen a steel scraper that will cut as well on a rounded surface as will the cleaved edge of a piece of chert.

Further experiment has been along the lines of trying to make a concentric tenon on the foreshaft of an arrow with stone cutting tools. I have seen almost perfect work taken from caves of the Salado civilization which I have been unable to duplicate. I would welcome any information concerning it.

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AARON J. COSNER
Payson Route
Globe, Arizona
January, 1955

THE PERSISTENCE OF SOUTHERN CULT GORGETS AMONG THE HISTORIC KANSA

Shell gorgets in the shape of a human face are well-known artifacts of the North American archaeological complex often termed the "Southern Cult." These gorgets were usually made of a pear-shaped section of the outer whorl of the shell of the whelk (*Busycon perversum*). Though the whelk is found only on the South Atlantic and Gulf Coasts of the United States, gorgets of this material have been found as far north as Manitoba and Saskatchewan (Montgomery 1908).

Recently the writer, in reading ethnographic accounts of the Kansa, was surprised to find descriptions, together with one native drawing, of what are very likely Southern Cult gorgets, used in Kansa war-bundle ceremonies as late as 1883. Since no one, so far as is known, has pointed out the persistence of this archaeological trait in historic Kansa culture, a few notes are perhaps appropriate.

The earlier of the 2 accounts, and one which is liable to be overlooked by most anthropologists, is J. Owen Dorsey's "Mourning and War Customs of the Kansas" (1885). The second is Alanson Skinner's "Societies of the Iowa, Kansa, and Ponca Indians" (1915). Though that part of Skinner's account concerning the gorgets seems to be largely secondary, he apparently secured a few additional details from Kansa informants.

The gorgets were the principal objects in clan war bundles. Of these bundles Skinner (1915: 747-8) writes:

> According to Forest Choteau and Wamo^{n}ike, from the latter of whom a war bundle of the Pta (Deer) gens was collected, there were certain men in each gens who had the right to own the

gens war bundle (wa^{a}obe). These men acquired the privilege through fasting and prayer which brought them the proper vision. After this had been obtained they sought out an old bundle owner and paid him to teach them how to make and use a clan bundle; henceforward, the new bundle owner was a potential war chief and might be called upon at any time to lead a war party.

Unfortunately the Kansa war bundle which Skinner collected was of a variant type which had a mummified hawk as its principal "medicine" object rather than a shell gorget. This was also true, according to Skinner (1915: 748), of the Kansa war bundles collected by M. R. Harrington. Skinner writes, however (1915: 748): "Some [of the war bundles] had large sea shell gorgets in them."

The principal use of the war bundles and the gorgets included in them was on "vengeance" war parties which were organized by a man's clan brothers shortly after his demise. The Kansa, like the Osage, held the belief that blood must be shed to make up for the loss of a member of the clan. Skinner (1915: 749) writes:

> On such an occurrence the relatives of the deceased would approach their gens bundle owner and give him a horse, bidding him to mourn from one to six months (Dorsey makes it less) as the case might be.
>
> After this period had elapsed, the bundle owner would call the tribe to council and select four braves (akida) to help him as officers, gather a war party and set out. Before going into battle, the sacred bundle was opened and the two braves took from it the hawk or the sea shell (gorget) and the reed and buckskin wrappers. The two warriors who did this thereby pledged themselves to kill an enemy or die in the attempt. These badges were hung around their necks by the leaders, who removed the charms at night before the party slept, and hung them on the forks of a crotched stick, whence they were removed and placed on their wearers early in the morning when they arose. The rest of the bundle, the bag and contents, was left behind.

An excellent description of the Kansa war bundle ceremony, observed at the death of Hosasage, a Kansa, in the winter of 1882-83, is contained in Dorsey's paper.

Fig. 97. Native drawing of shell gorget used in Kansa war bundle ceremony (after Dorsey).

Though too long to reproduce here, a few points in this article seem worthy of mention. Dorsey calls the gorget a "clam shell" throughout, but since he had never seen one of these objects this identification seems open to question, especially since his informants said that the shell "had been brought 'from the great water at the east'" by the ancestors of the Kansa (1885: 673). Dorsey includes a native drawing of a gorget, made by Paha^{a}legaqli, the keeper of one of the war bundles (p. 673, Fig. 3) which is reproduced here as Figure 97. Note that on this drawing the mouth of the face is absent, a characteristic of some of the Southern Cult gorgets recovered archaeologically. The mouths of the faces on these gorgets were generally represented by small circular drillings, often quite shallow, and on many specimens these depressions are completely worn away due to the flaking of the shell (Howard 1953: 135, Fig. 51).

Contained in the same bundle with the gorget was a pipe, also figured in Dorsey's article (p. 674, Fig. 4). This pipe is of the disc type, a form often recovered in Oneota sites. Some interesting notes on the treatment accorded the pipe and gorget by the Kansa are found in Dorsey's paper (p. 674):

> When the sacred pipe is smoked by a Large Hanga (Black Eagle) or a Small Hanga (Chicken-hawk) man, he must hold it in his right hand, blowing the smoke into the clam shell, which is in the left. The smoke is supposed to ascend to the thunder god, the god of war, to whom it is pleasant. There are five envelopes or wrappings for the shell, similar to those around the war pipe. All of the wrappings are called the "i^{a}he-cabe." The inmost one is of the bladder of a buffalo bull; the next is of the spotted fur of a fawn; the third is a matting made of the tall grass called ni; the fourth a broad piece of deerskin; the outmost one is interwoven hair from the head of a buffalo bull.

Curiously, the Dorsey account (p. 675) refers to the gorgets being worn on the individual's back, rather than on the breast.

Aside from the late date of their occurrence, the presence of Southern Cult gorgets (if, indeed, that is what they are) in Kansa sacred bundles should occasion no surprise. The ancestral territory of the Kansa tribe, northeastern Kansas, on the Missouri River above the mouth of the Kansas River, and on the Kansas River (Swanton 1952: 294), coincides with a part of the area where the Oneota culture, often quite rich in Southern Cult materials, occurs archaeologically. Furthermore the Kansa, as members of the Degiha group of Siouan speakers, are very likely descendants of these Oneota peoples.

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JAMES H. HOWARD
Ann Arbor, Mich.
October, 1954

A UNIQUE HOPEWELLIAN MASK — HEADDRESS

During the analysis of the cremated remains from 4 Ohio Hopewellian sites, burial associations, including utilitarian tools and ornaments, were recorded with 52 of 128 burials. Approximately half of the artifacts were burned with the deceased, while the remainder were placed with the calcined remains at the time of interment (Baby 1954: 3).

The cremated remains from a "shell-grave" burial (No. 13) on the floor of Mound Seven of the Mound City group, Ross County, Ohio, excavated by William C. Mills in 1921 (Mills 1922: 491), contained, in addition to other objects, fragments of an artifact fashioned from a human skull. The fragmentary condition is due primarily to its having been subjected to fire; hence it was not described at the time the report on the burial was written.

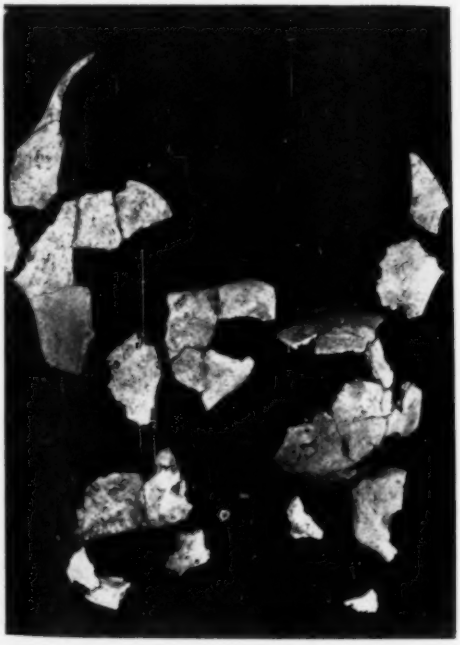

FIG. 98. Cremated remains from a Hopewell burial in the Mound City group; large fragments of the skull arranged in anatomical order.

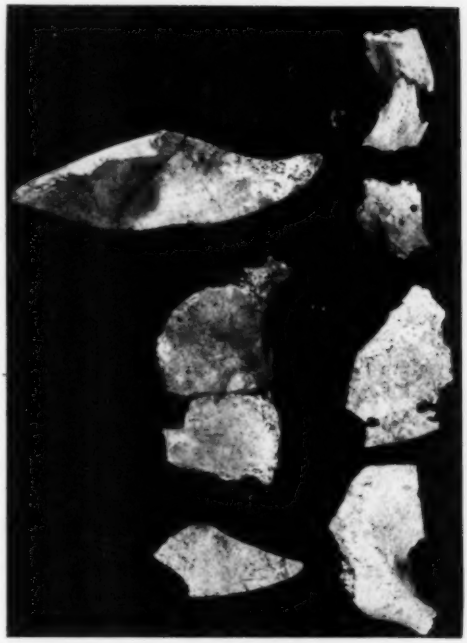

FIG. 99. Cremated fragments showing signs of preparation.

Careful examination of some 42 fragments and the partial restoration of those pieces making contact with one another reveals a large part of the frontal bone, including the left and right superior margins of the bony orbits. The upper facial skeleton is represented by fragments of the frontal process of the right maxilla, the orbital process of the right zygomatic, and a small portion of the maxillary process of the left zygomatic bone. Two large pointed fragments appear to be sections of both parietals, and a small semilunar fragment is from the superior squamous portion of the right temporal bone (Fig. 98).

All of the fragments show signs of preparation such as cutting, grinding, scraping, and drilled perforations, thus obliterating bony irregularities, sutures, and ridges for muscular attachments (Fig. 99). The drilled perforations which border most of the cut margins are 2 to 3 mm. in diameter and are 12 to 13 mm. apart. The maximum distance between 2 perforations is 29 mm. (Fig. 99). The fragments are exceedingly thin, ranging from 1 to 3 mm. in thickness. This reduction is due to (1) grinding of the outer and especially the inner compact layer of bone down to, and in some instances, into the spongy layer (diploe), and (2) to incineration.

While complete restoration is not possible, the identified fragments (see hatched areas, Figs. 100, 101) clearly indicate that the artifact was cut from the upper facial skeleton, frontal and lateral vault of a human male skull of undetermined age. The upper facial skeleton is cut 12 mm. below and 8 mm. behind the inferior bony margin of the orbits, along the lateral walls of the vault just below the temporal ridges, including the superior squamous portions of temporals, and across the top of the vault just behind the coronal suture. The "points" are believed cut from the posterior portions of both sides of the vault.

The careful preparation of the cut margins and the inner surfaces, and the widening of the area between the bony orbits suggest that this object was worn as a mask, covering part of the lateral and all of the anterior areas of the head as well as the upper part of the face. The drilled perforations suggest attachment for a cloth or leather cover (hood). They may have also served for points of attachment for objects of ornamentation such as feathers, copper spangles, and perhaps locks of human or animal hair. (Fig. 102).

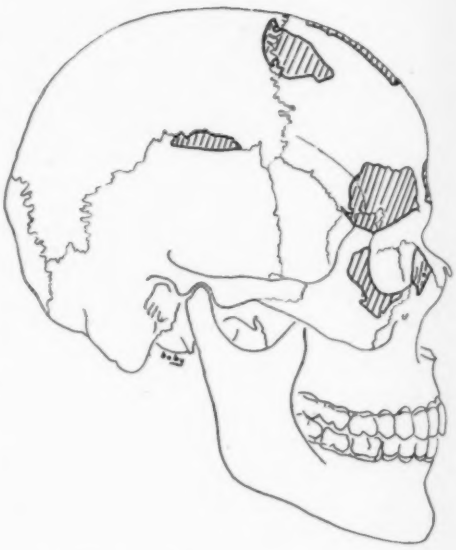

FIG. 101. Lateral view, restored; hatched areas are identified fragments.

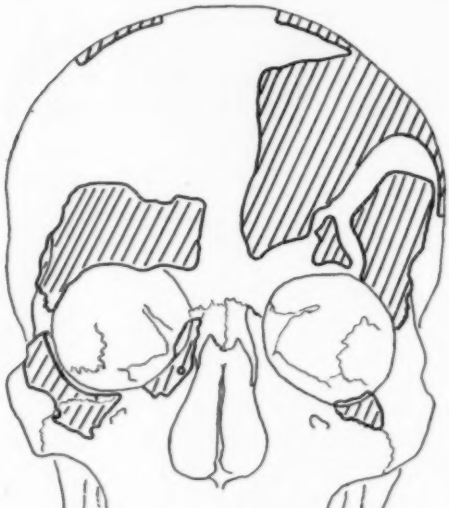

FIG. 100. Frontal view, restored; hatched areas are identified fragments.

Trophy skulls, worked sections of human skulls, particularly the jaw parts and long bones are well known for Hopewell. This mask-headdress of human bone, however, is unique and within the knowledge of the author no such specimen has previously been recorded. Aside from the possible sociopolitical implications (Sears 1954: 339), it undoubtedly was part of the paraphernalia used in connection with elaborate burial customs of the Hopewell people and during its use may have been employed to impersonate death.

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Ohio State Museum
Columbus, Ohio
September, 1954

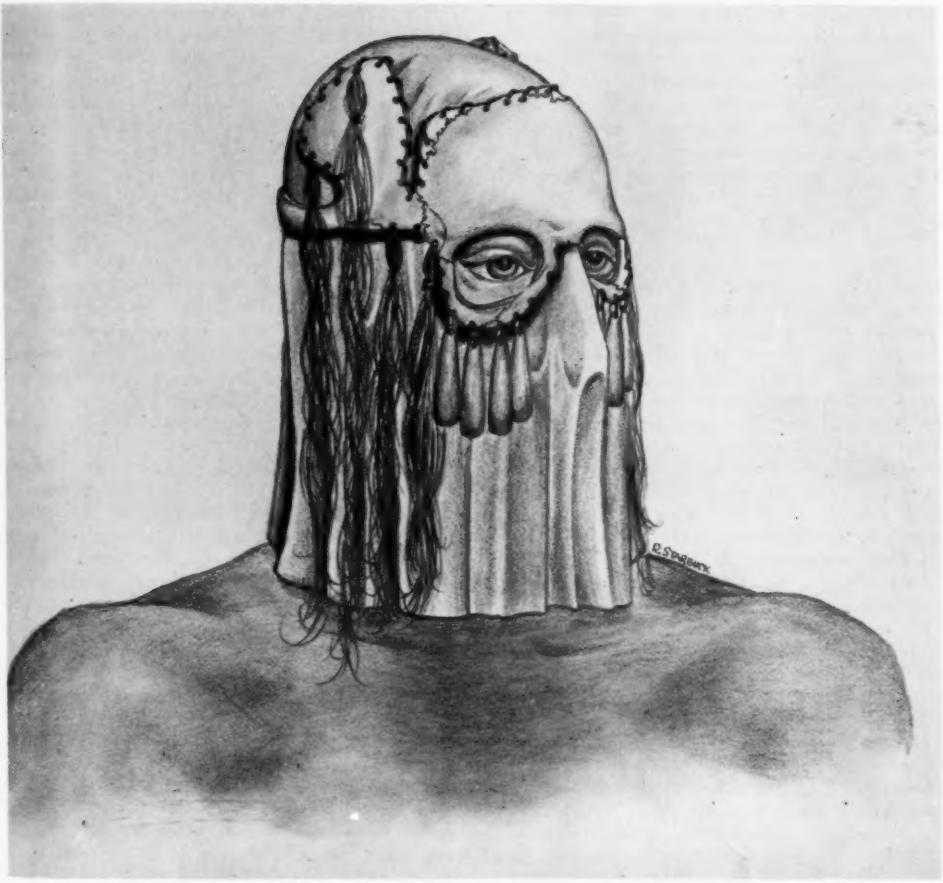

FIG. 102. Semiconjectural drawing of Hopewell mask-headdress.

ADDITIONAL DATA FROM THE DODD AND PHILLIPS RANCH SITES, SOUTH DAKOTA

All the archaeological specimens from the Dodd (39ST30) and Phillips Ranch (39ST14) sites, Oahe Reservoir, South Dakota, were transferred recently by the River Basin Surveys, Bureau of American Ethnology, to the United States National Museum for accessioning into the permanent study collection of the Division of Archeology. During the processing of the material it was necessary to handle each object, to check its field number with the catalogs, the feature sheets, and the published reports, and to prepare brief descriptions, measurements, and observations for the permanent catalog of the United States National Museum. While handling the specimens certain discrepancies between the artifacts actually present and those described in the published report (Lehmer 1954 [see review in this issue]) were discovered. These mistakes included the omission of individual objects as well as of several groups of distinctive artifacts, and erroneous descriptions and identifications. It seemed advisable that some of these items should be mentioned so that students of Plains archaeology may include them in the artifact inventories of the 2 sites.

From the fill of Features 17 and 44 of the Dodd site came 3 bone artifacts of a hitherto unreported type (Fig. 103 *a*). They consist of a strip, 7.5 to 10.0 cm. in width, cut from the distal end of a bison scapula. The distal margin remains unmodified except for a certain amount of "use-polish" on one face while the cut (or broken) edge is deeply and irregularly notched and considerably worn. All 3 specimens show breakage, the position of the broken and unworn edges suggesting that a part of one margin of the scapula once formed a handle running at a right angle to the worn edge.

A similar object with the handle intact (Fig. 103 *b*) came from the floor of a rectangular house, Feature 3, at Site 39LM3, in Lyman County, South Dakota. This complete specimen and the Dodd site fragmentary objects, plus the position and degree of the polish would suggest that they may have served as sickles for cutting the grass used to cover lodges before the layer of earth was placed over the outside. A tool somewhat similar in outline, but made from a deer mandible, is believed to have been used as a sickle by the Caddo (Swanton 1942: 153, Pl. 16, *1*).

Lehmer (1954: 71) identifies one group of objects from the Dodd site as "open center bone pendants" and questions their previous identification as fishhook blanks on the ground that no fishhooks were found at the site. He is in error. A fragmentary fishhook came from Feature 92, a cache yielding cord-marked body sherds of a type assignable to one of the earlier components of the site. The objects figured as bone pendants, as well as 2 additional unfigured examples, came from the fill of rectangular lodges and from a test pit. Mills (1922, Fig. 82) shows similar objects from Ohio in a plate illustrating the various steps in the manufacture of bone blanks and bone fishhooks. Closer to the Oahe area Hurt (1951: 28) has reported bone fishhook blanks from the Swanson site (39BR16), where a bone fishhook was also present.

The front half of a split beaver incisor from the floor of Feature 76, Dodd site, shows cutting marks on the concave surface and the distal end is excessively worn and flattened. This object closely resembles 2 from Maine which are figured by Tyzzer (1943, Pl. 27, *14, 15*) and identified as chisels. Similarly worked beaver teeth in the archaeological collections of the U.S. National Museum come from Maine shellheaps and from Iroquois sites of historic age in New York. The use of beaver incisor cutting tools appears to have been common in the northeastern United States from Maine to the eastern part of North Dakota and extending as far south as Ohio. They are a trait of the Point Peninsula focus and Ritchie (1944: 117) draws attention to the similarities between Point Peninsula and the Intrusive Mound complex from Ohio from which the use of hafted beaver teeth is reported as typical (Morgan 1952: 93). They are reported from the Red River aspect of Minnesota and North Dakota where they were made into chisels by cutting away part of the lingual surface to sharpen the biting edge (Wilford 1941: 245).

More objects were overlooked from the Phillips Ranch than from the Dodd site. One outstanding example is a group of 5 bone "paint brushes," all of which retain some traces of red pigment. The 2 complete examples (Fig. 103 *c, d*) are elliptical in outline, with lenticular cross sections, and measure 8.0 by 4.8 and 7.4 by 5.0 cm. respectively. All have well smoothed faces and are made from cancellous bone such as it present in the head of a bison femur. Bone "paint brushes" are part of a complex of artifacts that appear late on the Plains and spread widely in a short time.

Not mentioned, but of considerable interest, is a granite cobble, 22.0 to 25.0 cm. in diameter and 10.5 cm. in thickness from the Phillips Ranch site (39ST14). This shows a battered concavity in one face, which measures from 11.0 to 12.5 cm. in diameter and about 1.0 cm. in depth. The object resembles a shallow mortar and may have served as such in preparing meat and berries for pemmican.

Other items from the same site (39ST14) and also unmentioned in the report are a single projectile point of Group 3 type, and the highly polished fused radius and ulna of an antelope. One side of this ulna shows a definitely ground facet along the edge, which is well worn toward the distal end. The drawknife-like shape of the bones and the degree and position of the polish present suggest use as a beaming tool. There are, also, 2 elk antler tines which have been roughly broken from the main beam and which show a high polish on both the shaft and the broken surfaces. The points have been broken off but show wear after breaking. Comparable objects have been reported by Hurt (1953: 36) from Hughes County, South Dakota. It is possible that these worn tines may have served as picks. In addition, the Phillips Ranch site yielded a section, 8.0 cm. in length, cut from the base of a deer antler which in shape resembles the antler cylinders or knapping tools of earlier Plains horizons. However, the Phillips Ranch specimen appears to have had the spongy core removed, thus suggesting a somewhat different use.

Only 6 scapula scrapers are listed from the Phillips Ranch site (Lehmer 1954: 111) but 16 were present. Bone tubes described as "cut from dog (?) bones" (Lehmer 1954: 112) are actually cut from bald eagle humeri (identification by Herbert Friedman, Division of Ornithology, U.S. National Museum). Four of these tubes came from a single cache. A number of similar bones objects in the U.S. National Museum were taken from an Arikara grave at the Leavenworth site (Wedel 1955: 126). The 2 separate finds of tubes grouped together suggest that these bone objects may have been used in sets.

Bone objects listed from the Dodd site as "Punches, Group 1," were also present at the Phillips Ranch site where they were apparently unrecognized by Lehmer and classified as awls. Also unlisted but occurring in the Phillips Ranch inventory of artifacts are 2 Dodd site Group 3 bone awls.

Placed with the Group 6 awls from the Phillips Ranch site were 3 specimens made from bison or elk scapulae spines, a type of awl which has not been previously recorded from the Plains. Two (Fig. 103 *f, g*) are well finished, with a high, glossy polish, and show traces of long shearing cuts on one side, undoubtedly the result of having been trimmed into shape with an ax. The third specimen is rough and unpolished except at the tip. One of these objects came from the stripped area of the site, one from a floor, and one from a cache in Feature 8. Two scapula spines, which may have been raw material for more awls of this type, came from

FIG. 103. Bone objects from South Dakota. Scale 1: *b*, *i*; scale 2: *c-h*; scale 3: *a*.

a second cache in Feature 8. There is an ax cut measuring 8.7 cm. in length on one of these, which appears to have been made with an iron ax rather than with one of stone (Fig. 103 *h*).

Another undescribed object from the same site is a worn and polished scapula fragment cut from a discarded or broken hoe, which shows a rough perforation measuring 1.2 by 1.4 cm. One side of the bone is splintered about the perforation while on the other side the edges of the perforation show cutting marks, as if the hole was punched through the bone and the edges then smoothed by cutting. The cutting may have been done with a metal tool since the object shows evidence of the use of an ax or a heavy knife in the original shaping. A second object of this type from the same site shows a slightly biconical perforation through the thin portion of the bone near the posterior border of the scapula (Fig. 103 *e*). The hole has a maximum diameter of about 10 mm., with a minimum diameter at the center of 7 mm. The perforations in both these objects are unworn. Their use is not clear. Although they suggest arrowshaft wrenches, the perforation is rather large for this purpose in one case and too small in the other. A similar object has recently been reported from the same general area by Wedel (1955: 121).

Notched end fleshers made from bison metatarsals are reported from the Phillips Ranch site. Although the majority of these are, as reported, made from bison metatarsals, it should be pointed out that a few are made from the corresponding bone of the elk. In North Dakota the relative frequency of the use of the 2 species is reversed. At the sites of Rock Village (32ME-15) and Nightwalker's Butte in the Bull Pasture (32-ML39) elk metatarsals were favored over those of the bison. To the south, in Nebraska, the writer knows of no instance where these tools were made from elk metatarsals.

Lehmer is mistaken when he reports that "no worked shell of any sort was found at the Phillips Ranch site" (1954: 112). Two worked shells came from Feature 144, a test trench, and were identified by J. P. E. Morrison of the Division of Mollusks, United States National Museum, as belonging to a single individual of *Fusconia flava* (Raf.). The posterior ends have been roughly broken away in the past and the beaks or umbones have been ground down to produce perforations.

In describing the Group 2 hoes from both the Dodd and Phillips Ranch sites Lehmer states that "all of these pieces have been chopped through at the neck so as to remove the glenoid cavity" (1954: 63). Few of those from the Dodd site can be described as "'chopped through at the neck" if by "neck" is meant the narrowest part of the scapula; even fewer can be described as "chopped." Commonly, the proximal end has been removed, the removal being above the narrowest part of the bone. An impression is gained by a study of all these artifacts that the glenoid cavity and the adjacent bone was removed by a technic of *chipping* and *battering*, with the blows directed toward the distal end. There is a marked tendency, too, for the proximal end of the tool to be concave. In some cases the proximal end of the scapula has been broken off at, or near, the neck. Examples of this come from both sites.

At the Phillips Ranch site many, but far from "all," of the Group 2 hoes had the proximal end removed from the scapula by chopping it through at, or near, the neck. Unmentioned, however, is the fact that the chopping was done with a *metal ax*. At the Dodd site only 3 of the Group 2 hoes show marks which I am inclined to believe may have been left by the use of metal tools, and these marks were not at the necks.

While iron axes were not found at either site, nevertheless the worked bone from the Phillips Ranch furnishes abundant indication of their presence. In addition to the ax-marked objects already mentioned from this site, most of the objects identified as horn scoops show traces of shaping with an ax or an extremely heavy knife. A bison skull shows an attempt to remove the horns by repeated blows with a thin-edged metal tool. A bison horn-core still retaining a portion of the frontal has been removed from the skull by repeated shearing cuts with a heavy, thin-edged tool, the marks in no way resembling the battered, bruising cuts resulting from the use of a stone ax (Fig. 103 *i*).

In some areas of the Plains, potsherds have offered important suggestions of dating as well as showed the direction of intertribal contacts. Therefore, it is felt that some attention should be called to a group of 40 body sherds, unclassified by Lehmer, which came from 2 caches and the general excavation of the stripped area of the Phillips Ranch site. The following description is offered in the hope that finds of similar sherds may throw more light on the relationship of this site to others in the area.

At least 5 vessels appear to be represented in the group of 40 sherds. All appear to have been small, in 2 cases a maximum diameter of 18.0 cm. being indicated. Vessels with rather sharp, angular shoulders, markedly rounding underbodies and sloping upper bodies are suggested. Sherd color varies from gray through dull buff to one sherd of a bright orange-buff color. Paste is much more compact and finer than that of the predominating Stanley ware of the site and is without the crumbly texture so characteristic of that type. Tempering is with a sparse amount of grit, with the majority of the particles fine but with a few ranging up to 2 mm. in diameter. Sherd thickness ranges from 2 to 9 mm., with the greatest thickness at the shoulder, base, and neck. The ware is hard and the thinner sherds are rather brittle. Interior surfaces are unevenly smoothed.

Decoration is with small rectanguloid punctates or fine, incised lines, or with a combination of these elements. Commonly the lines are in diagonally placed opposed groups, in parallel horizontal groupings, or combinations of both. The incising is seldom skillfully done, with lines often unevenly spaced and wavering (Fig. 104 *a*, *c*). On one vessel the body was encircled by a row of punctates on the break of the shoulder with parallel horizontal lines present below and groups of

parallel diagonals meeting at opposed angles above. The horizontal lines below the shoulder are divided into zones by pairs of vertical lines which border a row of punctates (Fig. 104 *e*). Triangular areas more or less filled with incised lines are present (Fig. 104 *a*, *b*, *d*). Sherds from one vessel show a band of parallel horizontal lines with this band bordered on each side by vertical or diagonal parallel lines (Fig. 104 *c*).

A single sherd, apparently a basal fragment, furnished the only instance of curvilinear decoration in the group. This carries the major part of a circle from which groups of lines radiate, the intervening areas being filled with parallel horizontal lines (Fig. 104 *f*). This design is somewhat reminiscent of one on an out-of-pattern miniature water bottle excavated at a Lower Loup site in Nance County, Nebraska, in 1940. Although never figured in a report the miniature was, until very recently, on display in the Nebraska State Historical Society Museum in Lincoln.

The same designs used in decorating the shoulder area of vessels are reported from the Hagen site in Montana (Mulloy 1942: 27). Here, too, the workmanship is reported as sometimes poor. In describing Mandan pottery from the Old Fort Abraham Lincoln site, to which he ascribes a date of about 1750, Strong (1940: 364) says that incised designs are common on the shoulders of vessels and usually consist of opposed diagonals. He further states (1940: 365) that Hidatsa pottery from the first half of the 19th century closely resembles that of the Mandan and illustrates one Mandan and 2 Hidatsa sherds (1940, Pls. 5, *H*; 6, *F*, *G*) which show designs that are amazingly close to those on some of the 40 sherds under consideration. Incised designs on sherds from the Double Ditch site above Bismarck, North Dakota, are also similar to those on the 40 Phillips Ranch sherds (Will and Spinden 1906, Pl. 38).

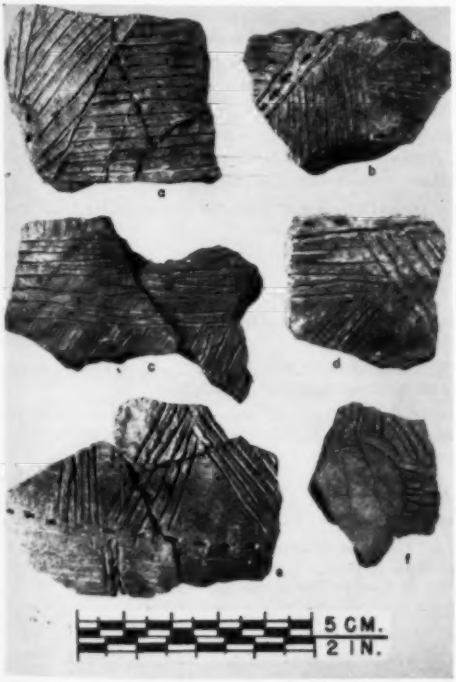

Fig. 104. Incised sherds from the Phillips Ranch site.

It is interesting to note that the additional data obtained from this restudy of the material from both the Dodd and Phillips Ranch sites tend to strengthen many of the conclusions presented by Lehmer in his report.

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George Metcalf
United States National Museum
Washington, D.C.
April, 1955.

THE LUCY SITE IN CENTRAL NEW MEXICO

The Lucy site in the Estancia Valley of central New Mexico promises to be an important locality for Early Man. Excavations were conducted there in the summer of 1954 as part of the University of New Mexico Field Sessions, directed by Frank C. Hibben. Much of the field work was done by Thomas B. Hughes and William B. Roosa, who acted as foreman. Other students who worked at the site are Erica Child, George Hopkins, Charles McNutt, Stewart Peckham, Octavio Romano, Russell Schorsch, and Gretchen Steiner.

The Lucy site was discovered by K. W. (Sambo) Kendall of Willard. It consists of a series of sand blowout areas south of Lucy. The site is in the head of a broad valley well above the shoreline of Pleistocene Lake Estancia and appears to have been a series of former ponds or springs. The Estancia Valley, especially around Willard, has a great many blowouts which contain early types of projectile points. Most of these have been known to collectors for years. Mr. Kendall has been collecting in the area for 30 years, yet had not set foot on the Lucy site until the day he reported it to Hibben, just before the summer field session was scheduled to start elsewhere. The most common early types of projectiles in the area are easily fitted into Sellards' Portales complex. There are also a few Clovis and Folsom points. I know of no Sandia points from the area, however, other than those recovered during our field work. Mr. Kendall found several points which belong to the Angostura (Long) or Agate Basin types, but these were not from the Lucy site.

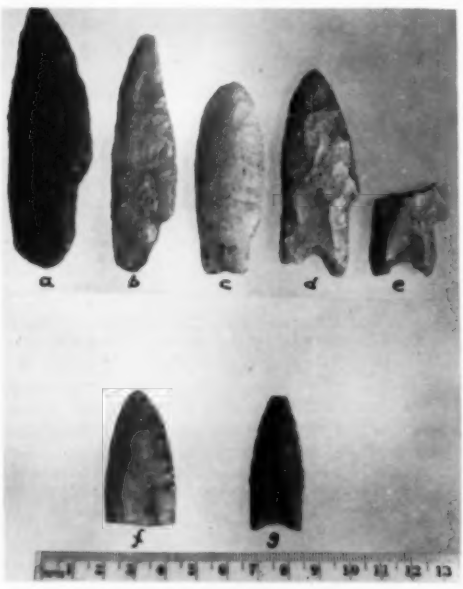

FIG. 105. Artifacts from the Lucy site, New Mexico.

Preliminary reconnaissance yielded a surface collection which includes Folsom points, a small Clovis fluted point, and fragments of teeth and bones of bison and mammoth. A Sandia point (Fig. 105 *c*) was found in situ just below the surface alongside a portion of mammoth long bone which was eroding out of a layer of hard gray-white sand.

Subsequent excavation in the immediate area yielded 3 more complete Sandia points, one of which is fluted on both sides, and a scraper. All were in situ in the gray sand layer. The base of another Sandia point fluted on both sides was found weathering out of this layer nearby.

The finding of Sandia points on the same site with a Clovis fluted point gives rise to the question of which is the older. The answer is only partly available at present. The small Clovis point mentioned (Fig. 105 *g*) was found on the surface in the same blowout area as the Sandia points. Since the Clovis point was completely uncovered when found, its stratigraphic position is uncertain.

Another Clovis fluted point (Fig. 105 *f*) was found eroding out of the surface in another blowout about ¼ mile from the Sandia points. To date, this blowout has yielded no other artifacts. However, fragments of mammoth tooth and bone are present on the surface. These strata in the 2 localities have not yet been correlated.

In addition to the projectile points mentioned above, the Lucy site has yielded a portion of an obliquely flaked point and several varieties of stemmed points from the surface. A Pinto (Chiricahua — Amargosa II) point was found in situ below a firepit.

Some data on the artifacts in Figure 105 are given below (measurements in mm.):

a. Length 84, width 27, thickness 9.5; translucent brown chalcedony; basal edges ground.

b. Length 75, width 21, thickness 6; gray chalcedony; basal edges ground.

c. Length 61, width 22, thickness 7.5; translucent white chalcedony; found alongside mammoth long bone; base and basal edges heavily ground.

d. Length 66, width 25.5, thickness 7; gray chert, fire damaged; fluted for approximately 40% of both faces.

e. (Base only), length 30, width 25, thickness 7; gray chert, fire damaged; fluted on both faces; basal edge opposite shoulder lightly ground.

f. (Base missing), length 44, width 23.2, thickness 7; gray chert; fluted on both faces; basal edges ground to point of maximum width.

g. (Tip missing), length 43.5, width of base 17.2, maximum width 18.2, thickness 5; mottled red chalcedony; fluted on both faces for 17 and 20 mm.; base and basal edges ground.

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BURIN TYPES FROM SOUTHERN VIRGINIA: A PRELIMINARY STATEMENT

From several sites within the John H. Kerr (Buggs Island) Reservoir area of Mecklenburg County, southern Virginia, a number of stone artifacts have been identified as burins or gravers. (The term "burin" will be used rather than "graver" as the latter term implies a limited use for such tools as engraving implements rather than for other purposes as well.) Associated with these burins are various types of projectile points, scrapers, borers or perforators, choppers, and a few cleavers or "coups-de-poing" comparable in chipping traditions to Old World examples. These burins occur not only on lamellar but on rough percussion flakes of chert.

While in Europe such tools occur chiefly in upper Paleolithic industries, Burkitt (1933: 59) considers: "For a tool to be classed as a graver it is necessary that it should have at least one graver facet. . . . When secondary work is done on a blade or flake as, for example, when an edge is trimmed, vertical blows are dealt on the edge, the flake or blade itself being held horizontally. This is invariably the case, as a moment's thought will show. In the case of a graver, however, a vertical blow is dealt at the point of the blade or flake down the length of the implement which is itself held vertically. The resulting flake scar, which truncates the edge of the blade or flake, is known as the graver facet. Before accepting a graver as such, therefore, it is necessary to be sure that there is at least one graver facet present, the existence of which can be demonstrated or not according to the position on the suspected facet of the negative bulb of percussion and the surrounding rings."

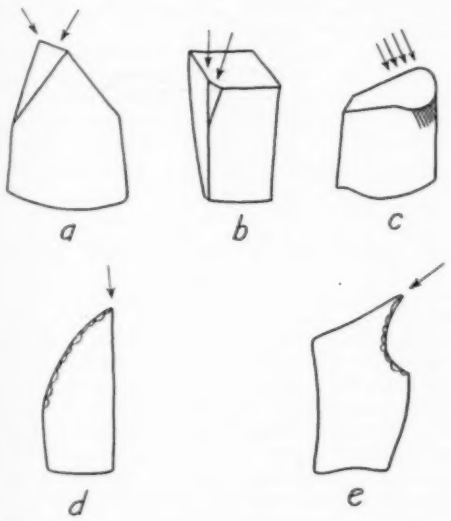

FIG. 106. Burin types. *a*, ordinary (bec-de-flute); *b*, single faceted, ordinary; *c*, polyhedric; *d*, parrot-beak (oblique convex); *e*, oblique concave angle. Arrows indicate angle of the graver facet.

Burins have been classified as either screwdriver or gouge types depending upon the appearance of the working surface. The screwdriver type is further subdivided into *Ordinary, Angle,* and *Single Blow* types, while the gouge type is broken into *Polyhedric, Angle, Single Blow, Beaked,* and *Flat* types, all of which do not appear in the southern Virginia category. Those that do occur have been examined and classified as belonging to the *Ordinary* screwdriver type or "bec-de-flute" (*a*), *Single Faceted Ordinary* (*b*), *Polyhedric* (*c*), *Parrot-beak* (Oblique convex) (*d*), and *Oblique Concave Angle* (*e*) types. Heretofore, such tools have been either unnoticed or not considered as part of the lithic industries of southern Virginia. These tools are not of comparable age with the European specimens but can be assigned to the *Early Hunters* or *Paleo-Indian* horizon.

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CARL F. MILLER
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December, 1954

ADDITIONAL RADIOCARBON DATES, LOVELOCK CAVE, NEVADA

Libby and Arnold (1952: 86) published 3 dates for samples from Lovelock Cave, Nevada. This material was collected by R. F. Heizer especially for this purpose. The sample numbers of Libby and Arnold are 277, 278, and 276. They are described as follows.

277 *Lovelock Cave, Nevada (Lovelock I)*: Burned guano from preoccupation level, Lovelock Cave, Nevada (LC4A). Submitted by R. F. Heizer, University of California, Berkeley. 4448±250.

278 *Lovelock Cave, Nevada (Lovelock II)*: Unburned guano, preoccupation level, Lovelock Cave (LC4B). Submitted by R. F. Heizer, University of California, Berkeley. 6046±300 and 5961±400. Av. 6004±250.

276 *Lovelock Cave, Nevada (Lovelock III)*: Vegetal material, earliest occupation level, Lovelock Cave (LCB). Submitted by R. F. Heizer, University of California, Berkeley. 2452±280, 2517±320. Av. 2482±260.

Johnson (1951: 9) republished this material and on page 24 of the same memoir Heizer discusses the significance of the dates and says, "The earliest occupation refuse (276) from Lovelock Cave dates at 2482 plus or minus 260 years."

Cressman (1951: 306-7) criticizes the validity of the assumption that the vegetal "material, Earliest Occupation Level" really represented material from that stage in the cave's history. It is obvious that the stage of information available at that time did not permit any unanimity of conclusion.

Lovelock Cave has always been considered by workers in the Great Basin of particular importance because of the evidence of cultural stratigraphy that was indicated

by the work of Loud and Harrington in 1924. It was clear that if an absolute chronology could be secured for the various levels it would help immeasurably in the solution of certain problems of very great importance in western prehistory. The first excavation in this cave was that carried out by Loud in 1912 for the University of California. Unfortunately, the material from this early work was not stratigraphically recorded. In 1924 Heye, as a result of purchases of specimens dug from the cave by collectors after Loud stopped work, sent Harrington to carry out further excavations. Harrington was joined by Loud and together they continued work in the cave. One stratigraphic section, Lot 15, was laid out in the southwest end of the cave floor where the fill appeared to be undisturbed. The size of the lot was 6 by 8 feet at the top but increased in size toward the bottom under the overhanging cave wall until it measured approximately 15 by 16 feet. From this section, which ran to a depth of approximately 148 inches, artifact material was segregated into 6 levels (Loud and Harrington 1929: 26). These levels on the basis of artifact discrimination were grouped into 3 periods of 2 levels each and called Early, Transitional, and Late. If the stratigraphic sequence was reliable it gave some idea of the cultural developments of the area during the cave occupation. There was no other area of the cave that could be used for stratitest purposes.

It appeared to me that if we could get radiocarbon dates on materials from each of the levels recorded in the stratigraphic column we would verify the stratigraphy and get a chronological frame of reference for an absolute chronology, thus avoiding fruitless arguments. I therefore took the matter up with Paul Fejos and asked his assistance in securing the cooperation of the Heye Foundation to provide from their materials from the stratipit specimens which could be used for radiocarbon dating. E. K. Burnett, Assistant Director, kindly offered to cooperate by furnishing materials. Libby, when convinced of the scientific importance of the project, expressed his willingness to run the tests. Burnett furnished 3 specimens from each level. It was originally hoped that we could get starting and ending dates for the levels. However, the specimens had the depth recorded only for the level as a whole from which they came. In conference with Arnold I suggested that if the samples for each level were combined we could assume an average or at least a "level" date from the results. This assumption is, of course, not entirely valid because obviously the specimens instead of being distributed in the top, middle, and bottom of the level might all come from the same part of it. However, the date does give a date for the level, although for what part we cannot say.

Libby (1954) published a list of radiocarbon dates covering the past year. He gives dates for our Lovelock Cave samples from 2 levels on page 739. Samples C-728, C-729, and C-730 are from the second level between 18 and 48 inches below the surface and give a date of 1686±220. His sample C-735 comes from Level 5, 96 to 120 inches below the surface, and his date is 3172 ±260 years ago. It should be kept in mind that this does not represent, according to the stratigraphic column, the earliest level, Level 6, and we still have to look forward to the date for this and the other levels.

Summarizing, it appears on the basis of 2 out of 6 levels of the stratigraphic column that the conclusion of Loud and Harrington on this matter was essentially correct, and that the earliest date of occupation of Lovelock Cave is not 2482 years ago but something beyond 3100 years ago. Great Basin workers will look forward to publication of further dates on the samples from the other levels and we are all indebted to Libby for the additional light he has thrown on this problem.

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Eugene, Ore.
November, 1954

RADIOCARBON DATING LISTS AND THEIR USE

"The Denbigh Flint Complex is Not Yet Dated," (AMERICAN ANTIQUITY, Vol. 20, No. 4, pp. 375-6) by J. L. Giddings raises a number of general questions concerning the collection of samples and the listings and use of radiocarbon dates which are not confined to the Denbigh material. Giddings says he is a "little worried about our use of 'lists' of radiocarbon dates in view of the recent treatment of some dates from Cape Denbigh." The publication of lists of dates has proved to be of considerable value to anyone who is interested in chronological problems. Primarily the lists facilitate reference. If the more than 2000 determinations were scattered in archaeological, geological, botanical, palaeobotanical and physical literature, it would be practically impossible to find them. For example, an archaeologist might never learn that a date on a level correlative with the Mesolithic but identified by pollen analysis had ever been determined. Again, students of southeastern North America would have difficulty finding dates on levels

in Central America from which the material they are dealing with may have sprung. The lists are also useful in forming judgments concerning trends in the development of the method itself and a lengthy list gives evidence of the character of the work of a laboratory. List of dates secured by several laboratories may be compared and estimates of general reliability or degree of precision can be made. Such estimates produce essential basic opinion concerning the significance of the dates relative to archaeological hypotheses. It is to be hoped that the publication of lists will be continued so that at the very least there may come into existence a directory of the results readily available to everyone.

There is a somewhat veiled implication in Giddings' "worry" that the record published in the lists may not be adequate or accurate. If this is true, the fault lies with the collector of the sample for only he is responsible for the record of collection and for the content of the published description. From the very beginning of the development of the method all laboratories with which I am familiar have relied upon the collector for judgments concerning significance and for approval of the published description. They have set up various procedures so to insure the accuracy and acceptability of these. The system employed by Libby in Chicago to compile his 5 published lists included 2 steps. First, with some exceptions, dates determined were sent in a personal letter to the sample donors. Second, a mimeographed manuscript was sent to all donors of samples. This included drafts of the descriptions of samples and the determined dates to be released; it was in final form. As on previous occasions, the manuscript for the fourth list of Chicago Dates, the one in which the Denbigh dates appeared, included in its introductory statement, "If any unfavorable features in the description or other parts of the presentation come to your attention, please let us know immediately, since the list is being submitted for publication. . . ." The published descriptions of the Denbigh samples are simple and straightforward. There is no indication in them of inconsistency, remembering the statistics, and there is ample justification for taking them at their face value. Giddings was the only archaeologist who knew about the manner of collection, the possibility of contamination by root hairs, and so on. That he neglected to edit carefully Libby's manuscript and postponed publication of an explanation for 17 months is most unfortunate. As a result, statements and opinions in the literature which were fully justifiable at the time will have to be corrected. This is confusing and a waste of time and effort.

These brutal remarks are made for the purpose of emphasizing the salient fact that sample collectors must fully recognize and discharge the responsibility which is theirs and theirs alone. The method is new and the archaeologist has much to learn about the actual collection and recording of samples. Unless he will apply himself to these problems it will be impossible to take advantage of the inherently great usefulness of the method. This responsibility of the collector can be described under 2 general headings.

The collector is responsible for the decision to submit a sample for age determination; he must decide whether or not a sample is suitable. In addition to the archaeological, geological, or other significance the collector must make primary decisions concerning contamination in the ground. The presence of noncontemporaneous root hairs, leaching in the soil, or the possibility of the introduction of noncontemporaneous organic matter can only be seen in the deposit surrounding a sample. Observations of such phenomena should be included in the essential meticulous record of collection. Should contaminating factors be present the sample must not be submitted, at least until the laboratory understands the situation thoroughly. In some cases preliminary tedious and costly determination of the degree of contamination may be justified because of the significance of a sample. Consideration of such matters by the collector and the laboratory will insure the best possible results. In some instances in the past collectors have "taken a chance" that the sample was suitable. Usually they have lost and the error has had to be corrected by long, wasteful explanation.

The second area of responsibility is the publication of the results. Obviously the descriptions of the samples must be complete and accurate. This may include, aside from the location of the sample, comments concerning the correspondence of the dates with current opinions regarding chronology. Opinions concerning collection, the character of the deposit, and any other contributory information are desirable and useful. A perusal of all the lists shows that laboratories have encouraged publication of such comments and that the descriptions of samples have materially improved during the past 5 years or more. Archaeologists and others submitting samples should strive for the perfection of this record.

In sum, archaeology has been presented with a new and valuable tool which can continue to be of major assistance in solving chronological problems. The degree of success of this method depends upon the continuing research in the laboratories and analogous meticulous attention to details by collectors. To produce results of maximum usefulness the collector of samples and the laboratory men must cooperate very closely. Collectors must learn more of soil processes so that their descriptions may be more precise. Better knowledge of the sample will improve the usefulness of a determined date. It will be to no avail if collectors assume that the laboratory men are magicians who can determine the true age of a partially described and poorly collected sample. It is also true that all scientists will be led astray if collectors do not make certain that the record and description of the sample is very clear and precise.

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June, 1955

REVIEWS

EDITED BY RAYMOND H. THOMPSON

Les Civilisations Precolombiennes. HENRI LEHMANN. Collection "Que sais-je?", No. 567, Presses Universitaires de France, Paris, 1953. 128 pp., 18 figs., 4 maps. 153 fr.

Henri Lehmann, of the Musee de l'Homme, has prepared an excellent and useful summary of New World high cultures that is both concise and up-to-date. It is in no way an interpretative work, however, but an outline of the major cultural achievements in the Americas written for the benefit of the interested nonspecialist. As such, it is one of the few satisfactory works of its kind yet to appear. Prior to its publication only art historians had successfully attempted such an outline, with Keleman's great *Medieval American Art* the outstanding example. In an interesting introduction the author outlines the history of archaeological work in the area, and the significant early man and pre-agricultural finds. He then examines in turn the Mesoamerican, Circumcaribbean, and Andean culture areas. Special emphasis is placed on ethnographic evidence. There is little suppression of detail for easy reading, and a large number of sites are referred to by name.

Perhaps the weakest section of the book is that on the Maya. Lehmann has evidently relied heavily on Morley, for he uses the latter's division of Maya history into "Pre-Maya," "Old Empire," and "New Empire." This scheme has been shown long since to be untenable. Although the exact tribal identity of the Formative peoples of the area is not known, it is highly probably that they were Maya. Moreover, many typical Maya culture traits probably reached high levels of development during the Formative, for example, temple construction, burial customs, the calendar, and so on. Beyond the fact that the Maya "empires" were even less of a reality than the Holy Roman, the cultural manifestations of these "empires" have been shown (through work in the Puuc sites) to have been in large part contemporaneous.

South American cultures, especially the Peruvian, are presented in more and better detail, and there is a very fine summary of both Chimu and Inca ethnography. Lehmann's statement on Paracas Necropolis ("It cannot be said that it is older than Nazca; in any case it belongs to the Classic Epoch.") is somewhat indefensible for several radiocarbon dates place Paracas Necropolis earlier than Nazca. Cultures of other areas are briefly discussed as "Irradiations of the Great Cultures," but this section, including Anasazi-Pueblo and Diaguito, is relatively sketchy. It would have been pertinent to present some of the Mesoamerican elements in Mississippian culture. The maps are a little too simplified, but the chronological table is excellent and seems to be generally in accord with the latest radiocarbon dates. The illustrations are confined to a relatively few line drawings.

Some of the major problems of Old World Culture history have been solved by considering Eurasia as a unit, rather than compartmentalizing it. It is probable that this approach will eventually be profitable in the New World. Spinden's Archaic Hypothesis becomes more a vital issue as research continues, with the fascinating Tlatilco-Chavin similarities as yet unexplained, and the old issue of New World autochtonous development versus diffusion from Asia and/or Oceania still unresolved. These types of problems are the really important ones faced by Americanists. Lehmann's book provides excellent groundwork in the form of summary material, but a really thorough interpretive work has yet to be written.

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New Interpretations of Aboriginal American Culture History. 75th Anniversary Volume of the Anthropological Society of Washington, Washington, 1955. viii+135 pp., 5 figs., 2 tables. $1.00.

During their 75th anniversary year the Anthropological Society of Washington organized a lecture series on New World culture history. This volume consists of these lectures with additional solicited papers designed to give a rounded coverage. In keeping with the original nature of the contributions as lectures, footnotes and citations are kept at a minimum.

In part, the papers cover the present status of research in specific regions of the New World. Albert C. Spaulding tackled a difficult assignment in attempting to summarize the archaeological sequence of the eastern United States which he presents in terms of the Archaic, Adena, Hopewellian, and Middle Mississippi cultures. Limitation of the discussion to these 4 cultures gives an oversimplified picture of the region's culture history. This is justified on the ground that the other cultures in the region "did not represent the most intensive expression of the successive culture types" and that they were "peripheral cultures." But is not marginality in part a function of the geographic locus of archaeological perspective? Are the cultures of the stamped ceramic tradition of the Southeast and the complex Caddoan units, to mention only 2 examples, so unimportant? Erik K. Reed, covering Southwestern archaeology, gives a brief history of the development of classifications and analytical approaches and then a survey of current investigations and outstanding problems. A highlight of the summary is the consideration of the linguistic affiliation of the archaeolgical complexes, an area to which Reed himself has contributed many fundamental insights. Philip Drucker, largely using ethnographic sources, advances the hypothesis that the distinctive basic patterns of the Northwest Coast culture were derived from the same subartic

fishing-and-sea-hunting base of the coast of Bering Sea and southwest Alaska that gave rise to the various Eskimo and Aleut cultures. The paper provides a theoretical framework for additional archaeological investigations as well as an incentive for more detailed comparative ethnographic analyses. Clifford Evans writes about northeastern South America. Suggestions made by Julian H. Steward and Gordon R. Willey in the *Handbook of South American Indians* on the diffusion and origin of the Circum-Caribbean and Tropical Forest culture types are critically examined, largely in terms of the field research of Evans and Meggers. Contrary to earlier opinions, the relatively complex cultures at the mouth of the Amazon are seen as the result of diffusion down the river from eastern Ecuador and Colombia, and the Guianas are regarded as a refuge area rather than a center of development for Tropical Forest type culture.

Other papers in the volume are somewhat broader in scope or are topically organized. Loren C. Eiseley examines the question of the peopling of the New World on a paleo-Indian horizon from the broad perspective of the pattern of man's development in the Old World. Stress is placed on the importance of the emergence in the Upper Paleolithic of modern man as a big-game hunter and the suggestion is made that this was an economic revolution of an importance almost equal to the later Neolithic one. Thus the broad distribution of *Homo sapiens* need not argue for the great antiquity of the type but rather for a rapid numerical increase and spread. The indication of the importance of the grasslands and the herds of social animals occupying them constitutes a stimulating ecological analysis. Gordon R. Willey follows the pattern of several classic papers in reviewing the evidence for diffusion between the centers of high cultural development in Middle and South America. His careful use of radiocarbon dates allows a more precise analysis of the probability for, and the direction of, diffusion. Of particular interest is the suggestion that Ecuadorian coastal cities served as trading centers and agents between the Chimu kingdom of Peru and various Mexican and Guatemalan tribes. Even broader in scope is Gordon F. Ekholm's evaluation of the status of the problems of Asiatic-American relationships. Rather than a primary contribution to the study of connections, it places such studies in their proper perspective in anthropological research and evaluates their methodological procedures. An essay by George L. Trager considers the methods of historical reconstruction in general, with linguistics as a point of departure. The final paper is that of Betty J. Meggers, "The Coming of Age of American Archeology." In part a summary of the contributions of the volume, it also examines the methods of the exact sciences and considers their applicability and similarity to the methods used in anthropology.

Rather than placing the stress upon archaeology, the reviewer would prefer to stress the broadening perspectives of American archaeologists. We have had a situation in the past where archaeologists and ethnologists have worked independently of each other in historical reconstruction, a situation we may attribute to the fact that the bulk of the data has existed largely in one field or the other. But it might be convincingly argued that future progress may depend upon the adequate utilization of the total body of evidence by students who regard themselves as anthropologists and have as a goal the solution of the significant problems of the field as a whole.

With this broader framework in mind, specific questions may be raised regarding the content of a few papers. Clifford Evans' testing of theories derived largely from ethnographic data is a laudable venture and also indicative of the fruitfulness of a rounded anthropological approach where no barriers are placed between "archaeology" and "ethnology." Yet we should expect precision in the utilization of terms and concepts of other areas of research. Evans summarizes the culture classification of the *Handbook of South American Indians* in terms of Marginal, Tropical Forest, and other "*areas*" and then states that "these categories were the result of grouping together those cultures with similar material traits, social and political structures, religious organizations, patterns of subsistence, etc." This is a particularly loose usage of a classification which is specifically based on a concept of a culture "*type*," lacking in most instances contiguous areal boundaries, and defined primarily in its final form on the complexity of sociopolitical and religious institutions. The objection is not a matter of quibbling over terminology, but rather a plea for a recognition that a different concept is involved in such a classification than that of the older culture area approach with consequently different historical implications when used in archaeological research. If we are dealing with a culture type that has developed in a particular area, we are concerned with a specific historic tradition and may investigate the dissemination and development of that particular complex. If, on the other hand, the classification is essentially that of a developmental stage, it may arise within a number of discrete historic traditions. A Tropical Forest type culture can have both an origin from a simpler Marginal type, and also come into being through the degeneration of a more complex society. We similarly lack precision when Betty Meggers indicates that one cultural principle drawn upon by several writers is "environmental determinism." Ecological interpretations and the concept of environmental limitation are fruitfully drawn upon in several papers, yet these are both different concepts and at the same time distinct from what has in the past been designated "environmental determinism." Is it proper to speak, as does Erik Reed, of the arrival of *Upper Paleolithic* early American hunters in the Southwest in reference to the recovery of Clovis Fluted points? Reed mentions this only in passing so that the implication of his remark is not clear. Nevertheless, there have been frequent instances of the

use of Mesolithic or Paleolithic as though these terms indicated specific culture types. Current usage is in relation to a time period within which a number of cultural traditions may be found. Comparisons, when made, should be to specific industrial traditions.

The critical comments, selected solely for their convenience in illustrating an area where greater precision would enhance scientific validity, do not contradict an appraisal of the volume as reflecting a high level of scholarly achievement. It will be found particularly useful as a general summary of the current status of historical research in the Americanist field.

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Los Congresos Internacionales de Americanistas. Síntesis Histórica e Indice Bibliográfico General, 1875-1952. Juan Comas. Ediciones Especiales del Instituto Indigenista Interamericano, No. 19, Mexico, 1954. lxxxiv+224 pp., 16 pls. $2.00.

From the first International Congress of Americanists, held in Nancy in 1875, to the most recent, which met at São Paulo in 1954, 31 sessions have been held, and at them over 2100 papers on every conceivable subject directly or remotely connected with anthropology have been read. An index of these was badly needed. In this publication, sponsored by the Wenner-Gren Foundation, Comas lists these articles by authors grouped under subject and regional headings such as Archaeology, Brazil and Venezuela; Ethnology, U.S.A. and Canada; Linguistics, Mexico, Central America and the Antilles; Physical Anthropology; and Social Anthropology. An index of authors is also supplied as well as an occasional explanatory comment under obscurely worded titles. There is an historical synthesis of the congresses illustrated with 16 photographs of former leaders in sundry fields of Americanist research. This is a most useful publication, for which all students of anthropology will be most grateful to the author, the sponsors, and the publishers.

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The Neolithic Cultures of the British Isles: A Study of the Stone-using Agricultural Communities of Britain in the Second Millennium B.C. Stuart Piggott. Cambridge University Press, Cambridge, 1954. xix+420 pp., 64 figs., 12 pls. $13.50.

A review in American Antiquity of a volume on Neolithic Britain may seem somewhat out of place. It is presented however with the thought that it may stimulate some American archaeologists to study the style of presentation and the method of interpretation used by one of Britain's leading archaeologists. This volume is the first comprehensive and interpretative study of the British Isles during the Neolithic stage. A similar cultural stage is widespread in the Americas. Many cultural traits, such as burial mounds (barrows to the British) of conical and linear forms, mounds over a mortuary house, walled (if not the chambered) tombs, flint mining, cranial amulets and cannibalism, cremation burials, strike-a-light sets, and trade, and many questions of interpretation are so similar to those which many American archaeologists deal with that one can feel quite at home with Piggott's problems.

A late Mesolithic population in the British Isles was ousted and submerged about 3000 to 2000 B.C. by the introduction, or introductions, of collective tombs and ceramics, agriculture, and animal husbandry. The best interpretation is that these new items were introduced by peoples migrating from the continent in the Channel area. The data presented by Piggott are convincing, because not only can he show that a whole series of new traits suddenly appears in southern Britain, but he can also identify areas on the continent with trait complexes so similar that a close cultural and chronological connection is implied. This is, of course, the type of evidence needed, but it is rarely presented by some American archaeologists when accounting for localized cultural change by the concept of migration. The introduction of the new cultures did not result immediately in a blend with the local Mesolithic but in the establishment of new functioning societies in southern England.

Piggott recognizes a "Primary Neolithic" represented by these early introduced Neolithic economies, and a "Secondary Neolithic" composed of cultures which were produced by "a marked resurgence of indigenous Mesolithic elements as well as contributions from Scandinavian and north European sources themselves largely of Mesolithic stock." Mesolithic sites which show by the introduction of specific Neolithic items into their content that they existed well into Neolithic times would be desirable to support this interpretation. As it is, no such sites are mentioned for Britain and the Mesolithic flavor would seem to be introduced along with Secondary Neolithic elements from the east.

Piggott, like his American colleagues who work with comparable material, considers the total evidence in the identification of major stages, but finds pottery of primary importance in the recognition of smaller areal and temporal units. Much of the data comes from ceremonial areas such as the tombs rather than from the village sites. A considerable section of the volume is devoted to a descriptive analysis and arrangement of chambered tombs, cairns, gallery graves, and the like. Minor burial variations are regarded as having significance in terms of distinctive population groupings. This section is illustrated by many plans and sections drawn to the same scale.

Piggott interprets the Primary Neolithic as a culture type which persisted as a tradition, in some areas for over 500 years, and mixed with older and younger cultures to produce regional and temporal variations. The Primary Neolithic cultures thus preserved their distinctive features into time periods when newer, and

in some cases technologically more advanced, traditions were becoming adjusted in southern Britain. Piggott chooses to regard as "Neolithic" a time period when, apparently, the greater part of Britain was occupied by peoples in a Neolithic stage, and during the last third of which there was a growing occupancy by peoples of markedly different culture traditions who were using bronze. Some archaeologists would no doubt begin a "Bronze Age" when bronze items first become a fairly common part of a way of life.

This book is addressed to prehistorians and interested intelligent laymen; it does not read like a justification to other social scientists for the pursuit of archaeology. Piggott handles with skill and understanding a large body of prehistoric data which covers a considerable time period and a fair sized area. He achieves this without devising a formalized classification for any artifact type and without using elaborate and belabored statistical analysis. His book is a credit to him and to British prehistory.

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Paracas Fabrics and Nazca Needlework, 3rd Century B.C.-3rd Century A.D. Junius Bird. With Technical Analysis by Louisa Bellinger. The Textile Museum, Catalogue Raisonné, Washington, 1954. viii+126 pp., 26 figs., 127 pls. (16 in color), 3 technical charts. $18.00.

Webster defines a *catalogue raisonné* as "a classified catalogue, usually with descriptions or notes." The Textile Museum in Washington is engaged in publishing what must surely be one of the most magnificent of such catalogs, and the volume under review is the third part to be issued. The first 2 dealt with Near Eastern and Spanish textiles. The authors have gone well beyond the minimum meaning of "catalogue raisonné" and have provided us with a monograph on the Paracas and Nazca textiles in the collection of the sort we expect to find in the most elaborate multivolume excavation reports. It must be remembered, however, that in this case the specimens studied have been carefully selected for their artistic value, and, because they are purchased, they lack data on archaeological associations. A collection of this sort can, perhaps, be dated by comparison with excavated specimens, but it provides a shaky basis for discussion of problems of relative chronology.

The introduction and the catalog proper are the work of Junius Bird, and will not disappoint admirers of his lucid and painstaking exposition. The attentive reader will find stimulating observations and suggestions on almost every page. The introduction deals with chronological problems and includes an important discussion of the relative chronological position of Paracas Cavernas, Paracas Necropolis, and Nazca. In the catalog proper, the textiles are classified by garment type, with a page or two of general discussion prefacing each section. The more fragmentary pieces which are difficult to identify as to type of garment are classified by design elements under such headings as "birds," "cats," "winged men," and so on. Information on weaving and decoration technics, colors, condition, and patterning is tabulated for each piece, and the abundant enlarged photographs of details make all these features easy to study.

Miss Bellinger's section on technical analysis takes up again the problem of the relationship between structural technics and design and provides clear diagrams and descriptions of the technics used in the Paracas and Nazca collection. The data on individual specimens are tabulated in elaborate "technical charts" following this discussion. The author's wide background in Old World textile analysis gives her a valuable perspective, and her comments generally supplement rather than duplicate those in Bird's part of the monograph. Her terminology is sometimes idiosyncratic, and she is less conscious than Bird is of the limitations imposed by the lack of archaeological provenience, but these features do not detract seriously from the usefulness of her treatment. A good index and abundant plate references make the work easy to use, although I find the use of Roman numerals for plate numbers rather cumbersome when the numbers run as high as CXXVII. The plates themselves are the finest I have ever seen in a work on textiles; they must be seen to be fully appreciated.

Archaeologists using this volume will probably be most interested in Bird's discussion of the relative chronological position of Paracas Cavernas, Paracas Necropolis, and Nazca. Bird proposes a reversal of the generally accepted order of the Paracas phases, arguing that a sequence placing Necropolis before Cavernas gives a better seriation of design and technical features than the traditional one, derived from Tello, which makes Cavernas the earlier of the two. The argument is a very ingenious one and raises some interesting problems. It stimulated me to review all the published evidence on the subject and reconsider such unpublished evidence as is available to me from my own 1954 field trip and Strong's excavations at Cahuachi in 1952. I feel as a result that the balance of probability is against the sequence Bird proposes and that in this case the traditional sequence is more likely to be correct.

This is not the place to present a complete counter argument, but some weaknesses in Bird's brief may be noted. One difficulty is that the type collections that Lila O'Neale used to define the Cavernas and Necropolis styles in textiles are not very large and are not selected on a comparable basis. The Cavernas sample includes all the textile fragments collected by Yacovleff and Muelle in a careful excavation of a few graves at Cerro Colorado. The Necropolis sample, in contrast, represents a selection of pieces from the very sumptuous Necropolis mummy bundles which Tello found in a great cache in a neighboring sector of the site. The more ordinary textiles of the period are not necessarily represented in this lot. The probability of selection in the Necropolis type sample is directly relevant to Bird's

argument, since one of his most important points is based on the frequency of the technics of double cloth, tapestry, and brocade in the 3 phases compared. He says that these 3 technics are rare or absent in Necropolis but occur with increasing frequency in Cavernas and Nazca. None of these technics is common in the phases discussed, so the frequencies are calculated on very small numbers of specimens. The case for double cloth is weak. The only frequency statement we have is an oblique one by Rebeca Carrión, whose textile analysis is not very reliable, to the effect that double cloth is commoner in Cavernas than in Necropolis. On the other hand, the Textile Museum has 3 specimens of a technic which Bellinger calls "triple cloth." This designation is probably not strictly accurate, but in any case the specimens probably indicate that Necropolis weavers were familiar with the principle of multiple webs. For tapestry, the frequency is the reverse of that stated by Bird. No specimen of Cavernas tapestry has been illustrated, although Carrión says the technic occurs. The Textile Museum has 2 specimens which Bird assigns to Necropolis, and Yacovleff and Muelle illustrate another from the Necropolis mummy they studied in 1934. O'Neale had 2 or 3 specimens in her Necropolis sample of 246 pieces. In the case of brocade, Bird is right in saying that no Necropolis pieces are known, but this may be because brocade was used, as it was in Cavernas, only for narrow borders on poor garments which would not occur in the elaborate mummy bundles that have been studied.

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Max Uhle, 1856-1944: A Memoir of the Father of Peruvian Archaeology. JOHN HOWLAND ROWE. University of California Publications in American Archaeology and Ethnology, Vol. 46, No. 1, University of California Press, Berkeley and Los Angeles, 1954. viii+134 pp., frontis., 14 pls. $1.75.

John Rowe carries forward a well-established Berkeley tradition in paying high tribute to Max Uhle, both as a dirt archaeologist of tremendous scope, and as a research scholar of deep perception. Paternity for any branch of science is hard to establish, but few would quarrel with assigning the leading place to Uhle in the establishment of Peruvian archaeology as an objective science. Certainly his great monograph on Pachacamac, the work of one man without jeeps, technicians, or graduate students, is a published monument. His shorter, interpretative papers on the vast areas of south, central, and northern Peru opened vistas which have since been further objectified by Kroeber and others. Above all, Uhle left available records for later students to use. It remains to be seen whether the same can be said for his successor, Julio Tello, whom Rowe treats very brusquely. Both were field men of the first order; neither published more than a small percentage of his extensive field data. Uhle has had several amanuenses; only time can tell whether the same can be said for Tello. I have known both Uhle and Tello and consider them both great men. However, Uhle's rich field record, though scattered, is open and understandable; Tello's is, as yet, closed and inscrutable.

In the first 25 pages Rowe gives a condensed sketch of the life and, especially, the South American activities of Max Uhle which is both interesting and extremely valuable. It explained to me many things which were hitherto confused and inexplicable despite long delving in Uhle's original Peruvian notes and letters. There is a bibliography of Uhle, and one of the many writers who have referred to Uhle and his work. The latter record which covers some 6 pages forcibly demonstrates the impact of his work on the scientific world.

The 3 appendices are particularly interesting and valuable. The first covers (in Rowe's translation from the Spanish) 4 little known lectures on "The Aims and Results of Archaeology" which were delivered by Uhle in 1923 at the Universidad Central del Ecuador in Quito. These are largely postulated on the theoretical approach of the famous Egyptologist, Flinders Petrie. There are positive, and to me unacceptable, statements of Maya influence on basic South American cultures "proved" by a "Maya culture" in Cuenca, Ecuador. There is much in his discussion of "laws" that is specifically and theoretically wrong, and much, such as actual design sequence in Peru, which is specifically right. Truly, the formulation of laws, always in the background of scientific effort, is a double-bladed sword. In fleeting modern perspective Uhle's conceptualizations seem either strikingly right or wrong. They were never mediocre and they merit deep study.

Uhle's succinct comments on technics in archaeology have the trumpet sound — the guidons are out! Record all phenomena that culture touches. Record every detail of graves. Use faint tips; one success in a hundred failures *is good*! Contrary to Midwestern purists Uhle recommends the probe (*baquette* or *sonda*) — it's either the scientist or the *huaquero* and Uhle (and I) favor the scientist. He insists that *above all*, "no excavation is complete until it reaches undisturbed earth at the sides [sic] and *at the bottom*" (my italics). There is so much of both Andean and world-wide significance, for example: "There is thus nothing in the types of civilizations which is not capable of throwing light on the character and ancestry of civilizations, and it should be the duty of the archeologist to omit no observation on any object he finds, so that his results will contribute to the history of civilizations."

The remaining appendices contain letters from Max and Charlotte Uhle, replies, and documents (1903-1906). Times have changed since Charlotte Uhle could not go to Nazca because the region was "impossible for a woman to travel through." Where Uhle (1901) went horseback, Kroeber (1926) in a Ford (both boiling water), my wife and I went safely in jeeps (1952-53) and lived in a hotel (drinking water from the tap) albeit much more expensively.

Rowe has an exasperating habit, occasionally, of making sweeping statements on recent events which he could easily check. He states, that in 1941 and 1942, among all the Institute of Andean Research personnel, only Gordon Willey visited Uhle at Bellavista, near Callao. Actually I also visited him there in both 1940 and 1941, and was fascinated to find him particularly interested in Eskimo archaeology! Since Rowe asks for letters, I include the only one I ever received from Uhle, which has interest since it refers to the Early Ancon culture (later named the Chavín culture by Tello) which has since been demonstrated to be the earliest Formative horizon in Peru. Uhle was deeply impressed with the Florescent (or Classic) cultures, Nazca, Interlocking, and Mochica, which he either discovered or defined, but was not impressed with Early Ancon. The letter also indicates his kindly attitude to those who later made his basic studies somewhat more widely and objectively known.

Quito, March 22, 1927

Dear Mr. Strong:

Allow me to thank you cordially for having sent me your valuable publication on the pottery collected by me at Ancon, which I received lately, and to express to you at the same time my admiration for the patience by which you had so good a result in unravelling the complicated system of ancient Ancon civilisations in exact accordance with the manner in which they were found. It seems to me for the moment that even I myself understood now better the general development of the decorations used in former times at that place. Some of the remains which equally appeared to me important, as some large vessels (to compare f.i.: Congress of Americanists, London, Fig. 10 on p. 40) were not treated in your papers, perhaps for their not being considered as equally characteristic. But is seemed to me that even some fragments of pots, still more similar to my Early Ancon, should exist in my Ancon collection from Ancon, place P, and this is apparently not the case as you make no mention.

Allow me to express to you at the same time, that I would not like to accept your suggestion of the significance of Early Ancon to be an original primitive style of Ancient Peru, from which even Protonazca might have been derived. As I am now quite sure about the central american general derivation of all the first original civilisations of Ancient Peru, I took the liberty to add a note to the text of my lextures on my archaeological experiences in Esmeraldas, in the sense of an equal centralamerican origin even of this curious type, still insufficiently represented, of one of the first of ancient Peruvian civilisations.

Thanking you again for your great kindness shown to me in the whole of your publication I remain

Yours very sincerely
Max Uhle

Since the complex Chavín horizon has become so important this letter seems historically significant. Also, since Uhle refers in it to an Esmeraldas (not, as in Rowe's translation of the lectures, a Cuenca) culture in Ecuador as possibly Mayoid, I agree that there are strange Mesoamerican stylistic trends in that known but little recorded northern coastal culture.

Rowe has floodlighted a great South American archaeologist. He has shown him to be a theorist as well as a highly objective scientist. One agrees with Rowe that all Uhle's records should see the light. However, I believe that what Peruvian archaeology now cries for, and what Uhle would most thoroughly approve of, is more extensive scientific digging and more publication.

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The Monagrillo Culture of Panama. Gordon R. Willey and Charles R. McGimsey. With Appendix by Robert E. Greengo. Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University, Vol. 49, No. 2, Cambridge, 1954. xiii+158 pp., 54 figs., 12 tables. $4.65.

The Isthmus of Panama has traditionally been regarded as a promising place to seek archaeological stratigraphy. It has been assumed that this constricted neck of land should logically have served as a funnel between Middle and South America, providing ideal conditions for long sequences and the superimposition of cultures. Nevertheless, past investigations have been conspicuously unsuccessful in revealing these. While a series of culture areas has been recognized, virtually nothing in the way of time depth has heretofore been established.

The paper under review is of particular importance in providing the first clear chronological perspective obtained within the Isthmian region. The area involved lies along the shoreline of Parita Bay, on the Pacific side of the Republic of Panama near the base of the Azuero Peninsula. The report embodies results of fieldwork conducted in 1948 by a Smithsonian Institution-National Geographic Society expedition and, in 1952, by the Peabody Museum of Harvard. Primary attention is given to excavations at the Monagrillo shellmound, but additional digs and surface collections were made. From the 17 sites reported on, a somewhat broken sequence involving 6 pottery complexes has been recognized.

The earliest of these assemblages, the Monagrillo and the Sarigua, contrast sharply with the vast bulk of materials reported from Panama. Pottery is monochrome and simple in form; decoration, when occurring, emphasizes plastic technics. Features characteristic of the later polychrome horizons are conspicuously absent. Monagrillo remains include pebble chopping and grinding tools of a simple type hitherto unreported from Central America. Typologically, Sarigua pottery gives the impression of greater advancement than that of Monagrillo. Additional evidence, somewhat inconclusive, leads Willey and McGimsey to place the Sarigua complex as partially contemporaneous with or immediately following the Monagrillo phase. Cultural relationships of these complexes are obscure. Vague ceramic resemblances are pointed out, on the one hand Monagrillo with Guatemalan Miraflores and Venezuelan Los Barrancos, on the other hand Sarigua with the site of Cocalito, in Darien.

A presumed time gap of unknown though perhaps not extensive duration separates Monagrillo and Sarigua from the next 2 pottery complexes found along Parita Bay. The latter are designated Alvina, perhaps slightly the earlier of the two, and La Mula. Both are generalized Coclé, affiliations being seen, respectively, with the Sitio Hector Conte and with the Parita Coclé-El Hatillo phases. Contrasts with the earlier cultures appear not only in ceramics but in stonework.

Two apparently related complexes, El Tigre and La Arena, close the sequence. The latter dates from modern times; native pottery is still manufactured at the town of that name. El Tigre pottery resembles La Arena ware, and the authors suggest that the El Tigre complex may date from the Colonial period.

The report is noteworthy for its detailed correlation of geological, ecological, and cultural data. This is particularly apparent in the discussion of the Monagrillo shellmound. A series of definitive conclusions was made possible by extensive excavations in the mound, which led to the recognition and mapping of 11 depositionally significant strata, and secondarily by the collection of sizable samples of shells, which are classified and reported on by Greengo in an appendix. The formation of a lagoon, its subsequent disappearance, and the abandonment by the sea of its old coastline were traced. Correlating with these events were shifts in the readily available shellfish which formed the staple food of the mound's occupants. Oysters were initially dominant, but as the silt-burdened lagoon floor was formed, conditions near the shell heap became favorable for clams, which came into ascendency. However, following the silting in of the lagoon and the establishment of oyster beds to the seaward of the new shoreline, oysters regained their dominant dietary position. Apparently the Monagrillo and Sarigua complexes date principally from times when the lagoon waters were active, and it is suggested that the muddy lagoon conditions had not entirely disappeared at the time of the scattered Alvina and La Mula occupations along the coast. Subsequently, the old lagoon beds formed *alvinas*, subject to tidal inundation, and assumed importance as sources of salt. Salt-gathering expeditions in these coastal flats are attested to in early Spanish accounts and take place even today. The El Tigre pottery complex, with large coarse vessels recovered from fire pits, is interpreted as relating to such salt-boiling operations. Additional insights regarding the nature of the various occupations derive from the authors' painstaking consideration of ecological and depositional factors.

The concept of "concentration index" is advanced in this general regard. The index consists of the number of items in a particular category (artifacts or residue of stone, pottery, shell, bone, and so on) expressed in relation to the volume of an excavated area. If the relative rate of natural deposition is constant or well understood, it is held that the index is a useful technic to analyze the nature of the occupation itself. Major factors of cultural deposition seen as affecting the concentration index are the nature and frequency of the occupation, population size, and the per capita popularity of the specific category under consideration. Technics for detecting which of these factors is responsible for any variations in the index are discussed. The reviewer's impression is that the principal conclusions regarding the nature of Monagrillo occupation were reached independently of the index. However, applied more systematically in future field investigations, the technic offers promise for an added understanding of the conditions under which deposition of archaeological remains took place. Needless to say, this would entail considerable time and effort.

From a judicious combination of approaches — excavation and survey, the direct historical and the ecological — Willey and McGimsey have set up a tentative chronology which is of the greatest importance to Panamanian studies. The characteristics of the early Monagrillo phase have been detailed. Though the Monagrillo culture is technologically simple, this need not imply a truly great age. Unfortunately, absolute dating continues to remain obscure.

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Estampas de Honduras. DORIS STONE. Impresora Galve, Mexico, 1954. 253 pp. $3.00 (at Librería Atenea, San José, Costa Rica).

This is a collection of historical essays, mostly concerned with the discovery and early Spanish exploration of 4 regions of Honduras: the Bay Islands, Tegucigalpa, Choluteca, and Comayagua, the last named region receiving the lion's share of attention. The book concludes with a description of certain aspects of the Honduran struggle for independence. All the essays are interesting and informative, and display a true feeling for the country and its people. The opening sections of each essay will, however, claim the especial attention of Central Americanists, for here Stone describes in some detail the Indian populations of these areas and narrates the circumstances under which the aborigines first came into contact with the Spaniards. A perusal of her references reveals much source material which is not generally available to North American investigators, and the inclusion of these data renders her book all the more valuable. I was struck in particular by her description of the late Yucatecan Maya occupation of the Sula-Ulua plain (pp. 80-83), for the purpose of supplying extra food for their fast-growing northern cities. If this occupation was as important as appears herein, it seems to have been singularly neglected by most present day writers in the Maya field.

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Unclassified Buildings and Substructures. LINTON SATTERTHWAITE, JR. Piedras Negras Archaeology: Architecture, Pt. 6, Nos. 3-12, University of Pennsylvania, University Museum, Philadelphia, 1954. Pp. 23-92, 27 figs.

The University Museum was actively engaged in work at Piedras Negras from 1931 to 1937, and finally, in 1939. The results of this work are being published from time to time. This paper is a continuation of the description of unclassified buildings and substructures at Piedras Negras published in 1944 as Part 6, Numbers 1 and 2 of this series. The 1954 material consist of the data on Structures 3 to 12. In a remarkably concise, abbreviated, and factual form these data for each structure are presented under such headings as: Preliminary Remarks, Dating or a Discussion of Periods and Phases, Burials (when they exist), Function, Dimension Table, Masonry Notes, and Object Table. Such clear reporting denotes painstaking field work in excavation, recording, and interpreting. As with other reports in this series, this paper appears in offset printing. The drawings are clear, the reconstructions in isometric projection, and the photographs well selected.

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Stone Monuments of the Río Chiquito, Veracruz, Mexico. MATTHEW W. STIRLING. Bureau of American Ethnology, Bulletin 157, Anthropological Papers, No. 43, Smithsonian Institution, Washington, 1955. 23 pp., 1 fig., 26 pls. $2.75, whole bulletin.

The Cerro de las Mesas Offering of Jade and Other Materials. PHILIP DRUCKER. Bureau of American Ethnology, Bulletin 157, Anthropological Papers, No. 44, Smithsonian Institution, Washington, 1955. Pp. 25-68, 8 figs., 28 pls.

Both these reports have some bearing on the enigma of the Olmec style of art, whose role in the development of Middle American civilization remains one of the most intriguing problems in the archaeology of that area. Since much of the known Olmec material is of unknown provenience, these reports of clearly located finds cannot fail to be of utmost interest.

Stirling describes a remarkable group of large sculptures from 3 sites about 50 miles inland near the Coatzacoalcos River in southern Veracruz. These sites, Río Chiquito, San Lorenzo, and Potrero Nueveo, were briefly reported in the *National Geographic Magazine* for February, 1947, but no detailed archaeological description of them has been published. In the present paper Stirling describes 5 colossal stone heads similar to those found at La Venta and Tres Zapotes and about 15 other sculptures. All apparently pertain to the Olmec style, but some of the motifs are entirely new. Of particular interest is a table altar with atlantean figures in relief, and a bird effigy stone vessel with inscribed hieroglyphs. The photographs are excellent, especially in view of the field conditions in which they were taken. One might nevertheless wish that those of the great stone heads had been supplemented with sketches of the more obscure detail, which might be of great importance to students of artistic and glyphic symbolism, and which is partly lost in the presentation. In addition to the sculptures a granite column deeply buried in silt, and a number of unexplained troughlike stones are reported.

The cache from Cerro de las Mesas described by Drucker contains small stone objects of an astounding variety of styles and manufactures. His treatment of this material constitutes a valuable contribution to our knowledge of lapidary technics. The clarity of his descriptions, however, is somewhat offset by ambiguities in his discussion of chronological and cultural implications, particularly in regard to the Olmec material contained in the cache. The archaeologist familiar with the intricacies of the Olmec problem may have no difficulty in giving Drucker's remarks their proper interpretation, but they can easily be misleading. In his previous report on La Venta, Drucker correlates the occupation of the site with the Early Classic Tzakol phase of pottery at Uaxactun. In the present case, he refers to "The Pre-Classic Middle Tres Zapotes-La Venta horizon (a prolonged Urban Formative phase immediately preceding the Classic Upper Tres Zapotes)." This verbal smoke screen may persuade the unwary reader that Drucker has actually changed his estimate of the chronological position of La Venta in the interim between the 2 reports, but apparently he is merely trying to stretch ready-made chronological schemes to fit his La Venta material. The use of the word "horizon" as equivalent to "a prolonged phase" further confuses his meaning. In justice to Drucker it must be said that he does not allow these misty schematic conceptions to influence his discussion of more specific relationships. His descriptive definition of the Olmec style gives a clearly stated foundation to his judgment of stylistic identities and influences, and his sensible approach to these matters is to be highly commended.

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Faunal and Archeological Researches in Yucatan Caves. ROBERT T. HATT, HARVEY I. FISHER, DAVE A. LANGEBARTEL, AND GEORGE W. BRAINERD. Cranbrook Institute of Science, Bulletin 33, Bloomfield Hills, 1953. 119 pp., 8 figs., 12 pls., 3 maps. $2.50.

This report is a worthy successor to Mercer's pioneering study in 1895 of the limestone caves of western Yucatan. Hatt conducted expeditions in 1929 and 1947. Excavations in 9 of the 14 caves visited were for the purpose of determining sequential changes in Yucatan's vertebrate land faunas with the hope of correlating these findings with the history of human occupation of the Yucatan peninsula.

The published results are presented conveniently in 5 parts. Part 1 is an introduction in which Hatt lucidly summarizes the field work, the previous studies, and the physiography, geology, climate, soils, vegetation, and biotic areas of the Yucatan peninsula. This is followed by a description of each cave investigated with a check list of the vertebrate species recovered and identified. Hatt discusses the mammals in Part 2. The faunal collections are fairly selective, and with one exception (Lot 15 from Spukil Cave) are of geologically recent time associated with potsherds and other evidence of human habitation. Lot 15 came from a soft, artifact-free, red earth underlying a sherd-bearing surface layer of gray earth. Hatt believes that the fauna from the red earth, which included several early post-Pleistocene animals not found in deposits containing cultural remains, antedates human occupancy of the Yucatan peninsula.

Fisher's study of the birds, Part 3, indicates that the avian bones from the caves are of recent origin. None show evidence of fossilization. Again selectivity was apparent because no aquatic or migratory North American species were identified. Fisher discusses the various modes of entry into the caves and suggests that many of the larger birds were carried in by man. Some of these bones appear to have been split to obtain the marrow. In Part 4 Langebartel points out that the reptiles and amphibians from the caves are much the same as those existing in the peninsula today. He believes that the larger iguanas and snakes, and the aquatic turtles were killed for food by the Maya.

In Part 5, Archeological Findings, George W. Brainerd, deals with the ceramics and artifacts recovered by Hatt and with those collected by Mercer in 1895. Brainerd points out that so far the numerous excavations made in northern Yucatan over the past 75 years have failed to produce evidence of a preceramic culture. He reviews the conditions which impede the discovery and identification of such remains and wisely suggests that the investigation of shellheaps along the Yucatan coast offers another test for human occupation in preceramic times. A chronological key based on Brainerd's more extensive unpublished researches on Yucatan ceramics provides a dating scheme for the Hatt and Mercer collections. Brainerd follows the Goodman-Martínez-Thompson correlation of Maya inscriptions which equates the Maya date 11.16.0.0.0 with A.D. 1539.

Cultural Stage	*Approximate Dating*
Early Formative	1500 B.C. – ——
Middle Formative	—— – ——
Late Formative	300 B.C. – A.D. 200
Regional	A.D. 200 – 750
Florescent	A.D. 350 – 1000
Early Mexican	A.D. 950 – 1250
Middle Mexican	A.D. 1200 – 1350
Late Mexican	A.D. 1300 – 1550
Post Conquest	A.D. 1500 – ——

The entire collection of 498 potsherds was classified typologically as follows: Late Formative 1.2%, Regional 26.7%, Florescent 36.0%, Early Mexican 0.2%, Middle Mexican 3.4%, Late Mexican 32.1%, Post Conquest 0.4%. These percentages reflect the relative amount of human activity which took place from Late Formative times to the present day in the caves investigated by Hatt and his colleagues.

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The Material Culture of Pueblo Bonito. NEIL M. JUDD. With Appendix by GLOVER M. ALLEN. Smithsonian Miscellaneous Collections, Vol. 124, Smithsonian Institution, Pub. 4172, Washington, 1954. xii + 398 pp., 101 figs., 101 pls. $5.00

Pueblo Bonito in northwestern New Mexico is one of the most extensively excavated sites in the Southwest. It is also one of the least published. George H. Pepper dug at Bonito from 1896 through 1899 for the Hyde Expedition for Explorations in the Southwest and Judd from 1921 through 1927 for the National Geographic Society. The results of these 11 years of work consist of Pepper's published field notes which are extensively illustrated and supplemented by descriptive data for the most important specimens, and now this volume, the first of Judd's long-awaited studies. Judd promises further reports on pottery, skeletal remains, architectural development, excavations at nearby Pueblo del Arroyo, processional paths, and "other phases." In this volume he evidently intended 3 things; a popular account of everyday life in Pueblo Bonito, a résumé of the archaeology, and a discussion of the artifacts. This is both considerably more than the title suggests and a difficult exercise. Judd specifically restricts his conclusions to Pueblo Bonito despite his wide experience in the whole range of Chaco Canyon archaeology. In addition to working extensively at Pueblo Bonito and Pueblo del Arroyo, Judd or members of his staff excavated at least 2 smaller pueblo ruins and 2 pit houses, dug burials across the canyon from Bonito, conducted stratigraphic tests at Peñasco Blanco and Pueblo Alto, and made extensive surface collections from other sites. It is to be hoped, therefore, that the list of subjects for future publication will include a general synthesis.

According to Judd's reconstruction the site was first occupied by a Pueblo I pit-house village the inhabitants of which were not ancestral to the Bonitians. After the abandonment of this village the Old Bonitians moved in from some area to the north bringing with them new pottery forms and architectural practices. They built the nucleus of Bonito and occupied it until the 1050's when a second group of migrants from the north arrived. These were the Late Bonitians, a Pueblo III people who also brought in pottery and architectural practices of their own. They greatly enlarged the pueblo. The 2 groups lived side by side in Pueblo Bonito and maintained separate cultures, physical stocks, and languages for "a hundred years or more." When the town was abandoned in the mid-1100's the newcomers, the

Late Bonitians, left first and the Old Bonitians continued in residence for some time. This general thesis should not surprise anyone. Judd first published it in 1928 in the Proceedings of the 23rd International Congress of Americanists and he has enlarged it very little here.

Judd's claim that 2 groups so diverse as to be culturally, physically, and linguistically distinct occupied the site contemporaneously rests primarily on 2 general findings: in later levels both early and late pottery types were found in "invariable association"; most of the pottery and artifacts, both early and late types, were found in the earlier section of the ruin. One of Judd's staff, Frank H. H. Roberts, Jr., who carried out stratigraphic studies at Pueblo Bonito, Peñasco Blanco, and Pueblo Alto, presents a somewhat more logical interpratation in his unpublished study, *The Ceramic Sequence in the Chaco Canyon*, which was written in 1927 and submitted with the permission of the National Geographic Society as a doctoral dissertation at Harvard University. He suggests that as the pueblo grew, older rooms were abandoned and used as trash depositories by later inhabitants. Although Judd apparently used Roberts' manuscript he makes no direct reference to it in the text, possibly because it is not generally available and is intended for later publication in the present series, and he does not include it in his bibliography. Also missing is reference to Hawley's study of the contemporaneous materials from nearby Chetro Ketl. I believe it was Hawley who first suggested that 2 cultural groups of San Juan and Little Colorado derivation were represented in the Chaco area. This proposition was more fully developed by Kluckhohn in the report on Bc 50-51. Yet in reaching the conclusions on Pueblo Bonito Judd completely ignores this thought-provoking study of Kluckhohn's, as well as Hawley's report on Chetro Ketl, Brand's on Tseh So, and Dutton's on Leyet Kin, despite the fact that these sites are all within ½ mile of Pueblo Bonito. The greatest weaknesses in Judd's conclusions are that he does not correlate his findings with the published material from Chaco sites, that his conclusions on the room fill are on data which may be interpreted quite differently, and that he does not satisfactorily demonstrate that what took place on an area-wide scale also occurred in miniature in the single site of Pueblo Bonito.

Judd's treatment of the pottery is based almost entirely on the whole pieces from Pueblo Bonito with some references to material from Pueblo del Arroyo and to Pepper's finds of 1896-1899. The description is based on function; for example, bowls, porringers, and ladles. All types of black-on-whites, black-on-reds, and sometimes trade wares are included in the general descriptions. It is hard to locate precise data. On page 21 "Solid" is listed as the name of an Old Bonitian pottery ype. It is not described, placed in any sequence, or ever referred to again. On page 33 is the first of several references to finds of Mesa Verde pottery below th floor of 4 kivas and 1 room as well as in the upper layers of refuse. On page 232 all this pottery is disavowed as being of Mesa Verde type and is said to be an earlier form. Judd does not describe it or name it. He cannot have been unaware that the earlier phase of this pottery was described by Kidder in 1924, as Proto-Mesa Verde, or that it has also been called McElmo, particularly since he uses both these terms elsewhere in describing individual vessels. Judd also uses the pottery to substantiate his thesis that the Old Bonitians and the Late Bonitians were separate, contemporaneous peoples. The critical point regarding pottery in his argument is that after Late Bonitian pottery was introduced, Old Bonitian forms of black-on-white types invariably occurred in association with it. Manufacture of the Old Bonitian forms did not necessarily persist throughout the life of the pueblo, and the sherd collections from elsewhere in the Chaco region suggest otherwise. There is a significant quotation from Anna O. Shepherd on ground rock tempers as indicators of increasing trade, particularly in culinary ware, with the Chuska Mountain region to the west, and with the La Plata area to the north.

Judd found only 73 burials in 4 rooms in the earliest part of the site; Pepper and contemporaries recovered about 20 others. Thus, less than 100 burials have been found from a population Judd estimates to have been 5000. The burials are notable in that 68% were violently disturbed. The Bonito burials were placed on floors or in thin deposits just above floor in open rooms. The site was occupied for at least 200 years and some of these rooms were open for much of that time. Therefore, the disturbance could have taken place at any time over a 200 year or longer period. The few undisturbed burials were richly ornamented. Many types of pottery were also present as offerings, but Judd does not assign them to specific burials; for example, 17 bowls and 23 burials in Room 330, 62 bowls and 11 burials in 326. Judd believes the individuals represented were among the last, hastily buried defenders of Bonito and attributes the scattering of the bodies to marauding vandals late in the period of occupancy. However, there is the alternative interpretation that over a very considerable period of Chaco Canyon prehistory extended intramural burial was restricted to important individuals.

Pepper's rich finds have led many of us to think of Pueblo Bonito as a treasure house, but the actual number of artifacts seems very small when the size of the site and the many years of excavation are considered. Judd found stone implements to be particularly scarce: 3 knives, 5 drills, 4 axes, and 6 mauls. Recovery of perishable material, particularly basketry, was better than I would have expected. The artifacts are treated in 4 functional categories: Dress and Adornment, Household Tools, Implements of Field and Chase, Objects of Religious Implication. Like the pottery the artifacts are related to Old Bonitian and Late Bonitian occupations. While rigid schemes of taxonomy have often taken a beating, Judd's functional classification and his description possibly leave something to be

desired for comparative study. Note, for example: "From our awl collection we may derive a number of facts and figures. There are long awls and short awls; thick and thin awls; awls made in a moment from the first bone within reach and awls that required days of patient rubbing and polishing."; and, "Some are rounded, some are flat; some are thick and some are thin."

The 398 pages of this report are often interesting reading and the excellent photographs by O. C. Havens are superior to the usual run. If I have seemed critical of Judd's main theme it is not because I don't believe in Old and Late Bonitians but because I think his evidence is insufficient and susceptible of other interpretations. If I have found fault with some of the presentation it is only that I want to know how his 2 groups fit in with the rest of the large Chaco Canyon population. This may not disturb other readers. On the other hand Judd has attempted a massive effort to breathe life into archaeology. He has attempted to show diverse peoples living side by side; he has emphasized their difficulties with terrain and climate, explained their farming and subsistence, found marauding hostiles to harass them, and clothed them if not in their own garments in those from other sites. For this effort to humanize a dusty subject he deserves great credit. How well he succeeds can only be determined by the reaction of the general reader.

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The Geology of Chaco Canyon, New Mexico, in Relation to the Life and Remains of the Prehistoric Peoples of Pueblo Bonito. KIRK BRYAN. Smithsonian Miscellaneous Collections, Vol. 122, No. 7, Smithsonian Institution, Pub. 4140, Washington, 1954. vi+65 pp., 3 figs., 11 pls. $0.90.

This local study of an arid New Mexican valley was undertaken 30 years ago, when the fertile imagination of Kirk Bryan was actively occupied with problems of erosion and sedimentation in the Southwest. The manuscript was drafted in 1925. Repeatedly modified during the next 15 years, it is still admittedly incomplete. Nevertheless, it contains the local geographic study essential to the background of archaeological excavations in Chaco Canyon, and it records the vigorous beginnings of attack on the many questions raised. We owe its posthumous publication to the devoted efforts of Neil M. Judd, and we are grateful.

Sections on the general geology and climate introduce us to the description of the canyon and, particularly, of its alluvial floor. Here is the crux of the matter, and careful consideration of the alluvial floor inevitably raises the questions of the date of recent channel trenching and of the significance of that trench to vegetative cover and human habitation.

A brief section on present geologic processes in the canyon is almost an interruption, although a necessary one. Then we return to the alluvium underlying the valley floor — its materials, their arrangement, and the significance of contained human artifacts. The valley fill is complex. It was formed in repeated intervals of alluviation, separated by intervals of erosion. Contained human artifacts make it possible to date these intervals. Subsequent patient extension of the methods introduced at Chaco Canyon, and described here, has since expanded the local sequence of events (p. 37) into the elaborate "alluvial chronology" widely used in the western United States, familiar to most who will read this review.

But the alluvial record has more than temporal significance. Bryan explores its significance to prehistoric peoples with special methods of agriculture, and to the climatic record, with a foresight which is the more remarkable after 30 years. Here is the prospectus for cooperative work in geology, archaeology, and related disciplines which countless friends and students of Bryan have followed with success.

"The long delay between initation of this study and its publication have not been without advantage. During the interval we have learned that the geologic history of Chaco Canyon is not unique." These words come from the thirties, and succeeding years have seen still further accumulation of "a foundation of fact much larger than would have been possible in 1924 or 1925." The report in hand is not a patient compendium of recent additions to that foundation. These are available elsewhere, in the natural descendents of Bryan's successful work in Chaco Canyon. This report is a lucid prose exposition of the problems involved, of the directions in which later work has continued, and of the importance of such work to geologist and archaeologist alike. Active workers will continue to turn to more recent studies, with their increasing stores of data and their somewhat more sophisticated treatments. The Chaco report, which laid the foundation, is a lively anticipation of their broad significance and will continue to provide a readable account of the problems they explore.

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The Hopi-Tewa of Arizona. EDWARD P. DOZIER. University of California Publications in American Archaeology and Ethnology, Vol. 44, No. 3, University of California Press, Berkeley and Los Angeles, 1954. vi+pp. 259-376, 4 figs., 8 tables, 4 maps. $1.50.

Despite the mountainous literature already existing in the field of Hopi ethnology and history, there still remain dark corners into which it is fruitful to shed new light. In one such corner lurks the question of the special situation of the Hopi-Tewa of First Mesa with their relationship to the actual Hopi of the adjoining villages of Walpi and Sichomovi. It has always been known, of course, to ethnologists that the people of Hano or Tewa Village were originally of Tanoan stock and that they settled among the Hopi in 1696 as refugees from the Spanish reconquest of the Rio Grande

Valley. Certain cultural differences, most obviously the linguistic, between them and the Hopi have been noted, but to a considerable extent they have been regarded by students of Pueblo culture as simply a Hopi variant, and have not always been recognized as a thoroughly distinct ethnographic entity.

Dozier has remedied this misapprehension in an admirable and coherent presentation of the basic elements of Hopi-Tewa culture, with special emphasis upon their divergences from those of Hopi culture. Certainly no one could be better qualified for this task than the author, who is a Tewa of Santa Clara Pueblo, as well as a trained ethnologist. Being both bilingual and bicultural he has been able to meet the Hopi-Tewa almost as a kinsman and to interpret their culture lucidly in Anglo-American terms. Dozier recapitulates succintly the history of the migration of the Hopi-Tewa to the Hopi country, and then considers their present conditions of life, with special emphasis upon their relations with Hopi, Navaho, and Anglo. He describes briefly but with insight and sympathy the social organization of the village, including a thorough explanation of the kinship system, kinship behavior, the life cycle, clan structure, and factors of social control. Following this he discusses more briefly the ceremonial organization and economic pattern.

Throughout the objective presentation runs the theme of cultural dynamics, motivations, and values, and the reader is constantly made aware of the many facets of the complex problems of adjustment faced by a minority group among a culturally divergent society. Therein, perhaps, lies the major significance of this monograph, because it is one of the few detailed studies of cultural conflict and ultimate adjustment between 2 American Indian groups, each of which simultaneously has wrestled with the impact of Anglo-American social forces. Dozier brings out very deftly the personality characteristics of the Hopi-Tewa as distinguished from those of the Hopi. These are manifest in a greater degree of aggressiveness, eclecticism, and adaptability, all of which have combined to enable the Hopi-Tewa to adjust more successfully to the practical and materialistic values pressed upon them by white society, as well as to adopt from the Hopi many elements of ceremonial and social structure with which to enrich their own culture. At the same time they have maintained almost fiercely their cultural integrity, and although they all now speak Hopi fluently, they also retain the Tanoan language in full vigor. In recent years much intermarriage has occurred with the Hopi, and the main elements of Hopi clan structure and political organization have been imposed upon what was probably in the beginning a moiety system. The author feels that in return the Hopi-Tewa have contributed a community coherence to the Hopi of First Mesa, which makes of the villages there a better integrated group than exists among other Hopi villages to the west.

In addition to its ethnographic interest, this report is of archaeological value as well, since it throws considerable light on the prehistoric culture of the Tanoan peoples of the Rio Grande and also serves to explain certain differences between the mixed culture of modern First Mesa and its more strictly Hopi antecedent of prehistoric times, the remains of which are evidenced in the ruined villages of Sikyatki and Awatovi. Furthermore, Dozier reconstructs very clearly the probable prehistoric and early historic interrelationships of the various Tanoan-speaking groups and their migrations. Such a study gives a significant object lesson to the archaeologist in providing an analogy by which prehistoric migrations and cultural interchanges of peoples may be evaluated and interpreted.

This paper is, in sum, not only on excellent ethnographic report on a single small village, with important archaeological implications, but is also a very provocative study in comparative cultural dynamics between 2 related but dissimilar societies. Not the least of its virtues lies in the simplicity and lucidity of Dozier's English. He is capable of expressing himself adequately without resort to the esoteric jargon which beclouds some anthropological writing. One may infer that his facility with his native Tewa is equally fluent, a fact that adds measureably to the reader's confidence in his understanding and interpretation of his informants. The book will be read with profit by all students of American ethnology and archaeology.

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Montezuma Castle Archeology. Part 1: Excavations. EARL JACKSON AND SALLIE PIERCE VAN VALKENBURGH. Appendix by KATHERINE BARTLETT. Southwestern Monuments Association, Technical Series, Vol. 3, Pt. 1, Globe, 1954. x+86 pp., 17 figs., 46 pls., 11 tables, 2 maps. $3.00.

This brief report describes the excavations in 1933 under CWA auspices of a cliff ruin in the Montezuma Castle National Monument in the Verde Valley of central Arizona. The ruin, Castle A, is situated on the same cliff face as the better known but smaller Montezuma Castle 100 yards away. This unit originally contained 5 stories which rested on a shelf about 10 feet above the present river terrace. Some time after abandonment in the 15th century, a fire razed the structure and the upper 3 stories collapsed. This report covers the removal of the fill, excavation of sections in front of the ledge, trenching at the terrace level in search of graves and earlier occupations, and later trenching on the slope in front of Montezuma Castle.

The introduction consists of a detailed reconstruction by Jackson of early geological and climatic conditions in the Verde Valley, several paragraphs of cultural and geographical orientation, a general description of the excavation, a review of earlier (1933) work in the Verde Valley, and excavation procedures. Jackson describes the excavations and writes the summary and conclusions. Van Valkenburgh adequately covers the material culture under the usual subheadings. Bartlett compares

12 crania from Montezuma Castle proper and Montezuma Well several miles away.

From the viewpoint of the authors and the editor the problem in publishing the report must have been whether to present it as originally written more than 20 years ago or to re-edit it in terms of the changes in archaeological knowledge. They decided to leave the 1934 background and interpretation intact. This approach strengthens the factual validity of the report. However, this reviewer feels that reports published so long after they are written might well be prefaced (by the author or by a third person) to place the archaeological fact in a current theoretical setting, particularly in the case of National Park publications of a technical nature which fall so readily into the hands of the general public. For example, Castle A might have been discussed in terms of Patayan and Mogollon as well as Pueblo and Hohokam. Cognizance could also have been taken of later work by Schroeder in the Verde Valley as well as that of Haury, Smiley, Wheat, Colton, McGregor, Wendorf and others in adjacent areas. Notwithstanding, this publication is a needed addition to the slim literature of the archaeologically significant Verde Valley where the possibility of contact, if not overlap, occurs between the 4 major Southwestern complexes.

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Montezuma Castle Archeology. Part 2: Textiles. KATE PECK KENT. Southwestern Monuments Association, Technical Series, Vol. 3, Pt. 2, Reports from the Ethnographic Laboratory, Denver Art Museum, Special Report No. 2, Globe, 1954. viii + 102 pp., 44 figs., 50 pls., 8 tables. $2.00.

This detailed description of woven materials and cordage is a specialized supplement to the general report on the excavations at Castle A, Montezuma Castle National Monument. The 61 specimens consist of loom-woven textiles, sandals, cordage, cord skirts, matting, a net, and a twined bag. The textiles include 22 plain weave (with some variations, including rag weft), 4 weft-wrap openwork (2 with gauze-weave sections), 1 gauze weave, 2 weft float (unique to Montezuma Castle), 1 slit tapestry, and 1 diamond twill. An addition to the cloth decorating technics from Montezuma Castle is provided by Haury (1945, *Painted Cave*, p. 75) who mentions a painted blanket now in the Mesa Verde National Park Museum.

These specimens were found in one of the cave rooms of Castle A. Unfortunately exact records were not kept at the time of excavation, but the textiles fall somewhere within the time range of the site, about 1125 to around 1400 or 1425 (Pueblo III and IV; Colton's Honanki and Tuzigoot Foci of the southern or Verde Valley Sinagua). Most of this material may be late, since at Hidden House in the Verde Valley not far to the north, there was no weft wrap, gauze, or rag weft in a late 13th century sample of 26 examples of 7 textile technics. The sandals also suggest a late date, except for specimen 27 which is similar to those from Hidden House. The only difficult dating problem is the twined bag, which is of a style so far unique to Basketmaker sites farther north. Cotton and "other extraneous material" was found by Jones in the specimen, presumably adhering to the surface rather than woven in. Although this point is important for dating, it is not discussed.

The introduction consists of a summary and a short comparative discussion. The clear, careful, detailed descriptions of each artifact are welcome additions to the literature. These descriptive outlines are well illustrated by photographs and diagrammatic drawings conveniently placed within the text. Botanical identifications for each specimen and comparisons of the analyses by F. Martin Brown, Volney Jones, and A. C. Whitford are given in an appendix. Whitford's photomicrographs of 6 plant materials are reproduced. Analysis of the colors includes some comparison with the Maerz and Paul color dictionary. The few misprints I noticed are not likely to be confusing, except for the occasional substitution of "weft-warp" for "weft-wrap." The drawing of a weft-wrap technic (Fig. 13) was printed upside down. Specimen 7 is described as a plain-weave fragment, but it is a fragment of warp-face plain-weave belting. It is very similar to some belting which is described in my Hidden House report (in press, Mus. of N. Ariz., Bull. 29) with comments on distributions drawn from unpublished data gathered by Kent in 1949.

The report was written in 1938, slightly revised in 1946, and finally printed in 1954. Had Kent made the analysis more recently she would probably have included more comparative data and more information on such details as twist directions. She does not discuss in detail the wider historical significance of the Montezuma Castle textiles because she has an exhaustive study of the prehistoric Southwestern textile industry now awaiting publication. In spite of the time lapse, which has seen some changes in technics and objectives, this report is a valuable one. We can be very grateful that the Southwestern Monuments Association has been able to publish it.

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Highway Salvage Archaeology, Volume 1. Edited by FRED WENDORF. New Mexico State Highway Department and Museum of New Mexico, Santa Fe, 1954. iii + 105 pp., 42 figs. [EDITOR'S NOTE: This report has just been reprinted, and may be obtained for 50¢ (no stamps accepted) to cover cost of packing and mailing, from the Museum of New Mexico, Santa Fe, N.M.]

This publication is the first to result from a newly organized archaeological salvage program in New Mexico. Wendorf explains in the preface how this program was organized and how it functions. This section should be read with care by all professional archae-

ologists. The creation of a team of public servants bent upon the increase and preservation of knowledge about the prehistory of New Mexico is indeed a healthy trend. The archaeologists involved are to be complimented for the initial success of the venture and the cooperating state officials are to be praised for making the program possible. This joint effort will undoubtedly produce new information which will benefit not only the students of archaeology but also the people of New Mexico. Moreover, this information will tend to attract out-of-state visitors interested in the prehistory of the Southwest.

This volume is made up of 5 well-organized field reports: "The Excavation of a Small Pueblo III Site near Gallup, New Mexico" by Wendorf; "A Pueblo II Site near Laguna, New Mexico" by Wendorf; "A Pueblo III Site at Farmington, New Mexico" by Stewart Peckham; "A Pueblo I Site near San Felipe Pueblo, New Mexico" by Peckham; "Excavations near Aragon, New Mexico" by Albert H. Schroeder and Wendorf. The papers all follow a general outline: a short introduction with definition of the problem and site location and description; a section on "Local Survey" which includes descriptions of nearby sites; one on excavation procedure; descriptions of architecture, pottery, and artifacts with emphasis on the ceramics; and a summary which contains a short discussion of the cultural and chronological position of the site.

The format is open and legible. The reproduction of the typescript and the drawings is clear, but that of the photographs is only fair, perhaps because of printing limitations. The method of handling bibliographic references is not consistent. In the first 4 papers each reference is given in full in a footnote. Only the fifth report has a summary bibliography. At first glance this page of references for the final paper in the volume might be mistaken for a summary bibliography for the whole volume. The plan of publication is to produce a new volume whenever a sufficient number of field reports are ready for binding. The series will consist of reports on individual ruins spotted along various highway right of way areas throughout New Mexico. It is hoped that this cumulative descriptive material will be drawn together in a general summary when the final report appears.

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Pottery Types of the Arizona Strip and Adjacent Areas in Utah and Nevada. HAROLD S. COLTON. Museum of Northern Arizona, Ceramic Series No. 1, Northern Arizona Society of Science and Art, Flagstaff, 1952. vi+98 pp., 43 illus. $2.00.

Check List of Southwestern Pottery Types. HAROLD S. COLTON. Museum of Northern Arizona, Ceramic Series No. 2, Northern Arizona Society of Science and Art, Flagstaff, 1955. iii+43 pp. $1.00.

For many years Colton has been a leader in the formidable task of systematizing descriptive data on the many Southwestern pottery types. These 2 works represent a continuation of his ordering of ceramic typology.

The first of the new Ceramic Series is a supplement to the *Handbook of Northern Arizona Pottery Wares* published by Colton and Hargrave in 1937. It makes available additional pottery types found in northern Arizona and southern Utah. Workers in the northern periphery of the Southwest will find this a most useful starting point in studying sherd collections. Since the appearance of the report, a number of additional pottery types has been defined by Rudy (1953, *Archeological Survey of Western Utah*, Univ. Utah, Anth. Pap. No. 12). The 2 works should be used together since there is virtually no overlap in the type descriptions. Colton's report includes the area along the southern border of Utah; Rudy's defines material from further north.

The *Check List of Southwestern Pottery Types* has long been needed. It will be an indispensable aid to students confronted with the hundreds of type names now in the literature. Known pottery types are listed with bibliographic references to the descriptions of each type. Since an individual type is sometimes described in as many as 5 different publications, the utility of the check list is obvious. The bibliography includes items published in 1954 and the check list is complete through that year. One problem in using the list is that many types are described only in manuscripts which would be difficult to consult. On page 21, for example, there are 11 types which are described only in manuscripts. Perhaps the Museum of Northern Arizona will be able to publish some of this descriptive material in the Ceramic Series and thus make it available to all.

Some criticism of the typology used can be made by those concerned with cultural comparison rather than taxonomy (compare Brainerd 1954, review of Colton's *Potsherds*, AMERICAN ANTIQUITY, Vol. 20, No. 2, p. 188). The 4 major classes in Colton's classification are based on color (and hence firing) and on presence or absence of paddle-and-anvil technic. Since both of these sets of criteria can be deceptive, and particularly in working with sherd collections only, some difficulties stem from the selection of these features as indicators of primary differences. In a collection of small sherds, it may be quite difficult to recognize paddle-and-anvil technic, but this has to be determined before the type can be discovered in the check list. However, one has to begin somewhere in a description, and much the same criticism could be made of any trait used as a starting point.

In spite of these reservations, both reports are a definite step forward in organizing archaeological knowledge. Adequate description is basic to all archaeological conclusions, and the present studies contribute substantially to that end.

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The Garrison Site. A Report of Archaeological Excavations in Snake Valley, Nevada-Utah. DEE CALDERWOOD TAYLOR. University of Utah, Department of Anthropology, Anthropological Papers, No. 16, Salt Lake City, 1954. 66 pp. $1.25.

This report on a small Puebloid community on the Nevada-Utah border, near Garrison, Utah, is one of a series of studies designed by Utah researchers to enlighten archaeologists on the prehistory of the Southwest and the Great Basin. Taylor, perhaps inadvertently, confined the statement of the problem in this work to the achievement of a "comprehensive understanding of the prehistory of Utah." The site itself is actually in Nevada rather than Utah. More specifically the problem was stated thus: "The Snake Valley region was virtually unknown and presented an ideal field problem. It was expected, on the basis of early surface collections by Wheeler . . . and Osborne . . . that sites there would exhibit a relationship to Puebloid sites reported from central and southern Utah."

The paper does not purport to be an over-all analysis of Great Basin or Northern Periphery archaeology, but finds are compared with those found in adjoining regions whenever necessary. Its primary value is its descriptive sections which provide a welcome addition to our knowledge of a portion of the Northern Periphery between about 1000 and possibly 1276, when the great drought in the Southwest might have forced the population out of the region, or into another type of economy. Factual and descriptive reports are valuable, and after all, they are the bricks and mortar of the edifices called "analyses," "syntheses," or "theories" in archaeology. Even during the short span of occupation, a little over 200 years, there was change in architecture from a jacal type of house to one of adobe blocks. Pottery types, too, showed a tendency to be differentiated into Great Salt Lake Gray ware, and later Snake Valley Gray, a type which appears to have a center in this valley.

There are 4 chapters, of which the first is a short introduction giving details of the purpose of the excavations and data on the personnel involved. Chapter 2, concerned with the geology and geography of Snake Valley, is quite thorough and shows that the archaeologists worked very closely with field geologists and biologists in obtaining data relevant to the archaeology of the valley. It is stressed that there was a wide variety of plant and animal resources during prehistoric times which, with the cultivation of maize and possibly other plants, constituted the basis of the Garrison economy. Geologists helped in locating sources of obsidian, a material used extensively in tool making, and in discovering sources of adobe supplies useful in wall making. Chapter 3, titled "Résumé and Reconstruction," is a general description of the site and its contents, together with Taylor's reconstruction of "how the materials found were used in daily life." Chapter 4, "Correlations," is an effort to compare the Garrison site with similar finds made by Neil Judd, Julian Steward, John Gillin, and others who have made extensive studies in the Northern Periphery. Taylor concludes, "The materials at Garrison seem to represent a westward extension of items of material culture previously known and reported from other Utah sites" (p. 12).

Six appendices form the bulk of the paper. Taylor employs an unusual method of presentation in giving raw data on the Garrison site. Following the analysis in Chapters 3 and 4, the following appendices present the essential factual details: (1) Archaeological Procedures and Excavation Report; (2) Architecture; (3) Pottery; (4) Chipped and Ground Stone; (5) Bone and Shell Artifacts; (6) Flora and Fauna. In normal scientific presentation, one would expect to find the descriptive detail in the chapters between the introduction and conclusions of the paper.

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Mohave Pottery. A. L. KROEBER AND MICHAEL J. HARNER. Anthropological Records, Vol. 16, No. 1, University of California Press, Berkeley and Los Angeles, 1955. 30 pp., 2 figs., 8 pls. $0.75.

From 1902 to 1908 Kroeber made an ethnographic collection of Mohave pottery which is now in the University of California Museum of Anthropology. These 70-odd vessels are described in this report which consists of 2 separate parts, an ethnographic analysis by Kroeber and an archaeological one by Harner. Both descriptions include considerable detail which should make them useful for comparative purposes.

In Part 1 emphasis is placed on vessel shape, painted design, and relevant native terminology. There is a brief note on manufacturing technics, and there are many interesting comments taken from old field notes which relate to the use of pottery among the Mohave 50 years ago. Following the native classification most of the way, Kroeber discusses the different vessel forms in terms of 13 shapes: bowl, round platter or plate, oval platter, spoon (ladle, dipper, or scoop), parcher, cook pot, large cook pot, water jar, oval seed storage jar, seed jar with flaring mouth, canteen for carrying, handled jug, and handled cup. Design names, he notes, are not deeply symbolic and for the most part they are metaphorically or directly descriptive. Some are named after patterns of carefully executed painted face decoration, but not the reverse. Of Mohave pottery style, Kroeber feels that the unevenness in spatial organization and the "slapdash gusto" apparent in design application reflect ". . . a culture which set little intrinsic value on anything technological and looked upon acquisition as in itself unworthy and fit only for dissipation."

Part 2 provides a concise technical analysis of the pottery. Painted (95% of the collection) and unpainted wares are described as Fort Mohave variants of Parker Red-on-Buff and Parker Buff respectively. Harner distinguishes 5 major form types (bowls, jars, cups, scoops, and parchers) and 18 profile shape types (excluding

Kroeber's "oval seed storage jar"). Paste, surface finish, surface color, fireclouds, and paint are given special attention.

In Appendix 5 to Part 1 there is a list correlating 10 of Kroeber's 13 shapes and Harner's 18 profile shape types. Further discussion and comparison of the different criteria on which these and other classifications used in *Mohave Pottery* are based would be of interest to both ethnographers and archaeologists. It is evident, for example, that Mohave categorization did not start with a division of pottery into painted and unpainted wares, nor with over-all profile shapes. Instead, native classification appears to have first emphasized the formal distinction between wide- and narrow-mouthed vessels, the first 5 of Kroeber's shapes listed above falling into the former category. Native criteria for subcategorization involved functional as well as formal components.

A note on the representativeness of this sample and further elaboration on technics of manufacture (especially of parchers and scoops) would have added to the usefulness of the descriptive account. In general, however, this is an excellent report. It well documents a previously unpublished museum collection for both the ethnographic and archaeological record.

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Anthropology in British Columbia, Number 4, 1953-54. Edited by WILSON DUFF. British Columbia Provincial Museum, Department of Education, Victoria, 1954. 38 pp., 1 fig., 1 map.

The fourth number of this annual publication warrants consideration both as one of the newer series in anthropology, as well as for its contents. It is significant of the growing interest in anthropology in Canada, and particularly in British Columbia, that the Provincial Museum at Victoria, in conjunction with the Department of Education, should have been able to bring out this annual series. Credit is due to the editor, Wilson Duff of the staff of the Provincial Museum. In a broader sense, however, this annual is a recognition of the developing interest in anthropology which has been stimulated by the work of Harry Hawthorn and his colleagues at the University of British Columbia. With the exception of the Arctic and the Southwest, there is no area in North America north of Mexico where as many Indians are living in close contact with modern society. The Indians of British Columbia, after a checkered history of contact and almost complete culture change compressed into 150 years, are adjusting to the complexities of the modern world.

Anthropology in British Columbia is not, however, devoted to current questions of adjustment. It is a scientific publication in the best sense of the word, following the classical anthropological trend, with an emphasis upon archaeology. The current number contains 2 articles of first rate archaeological importance. Warren W. Caldwell publishes a detailed study of a survey in the Okanagan and Similkameen valleys in the extreme southern interior of British Columbia. Perhaps his most important conclusion is that the early inhabitants differed significantly from the more recent Indians in their slight dependence on fishing. Charles E. Borden gives a thought-provoking analysis of prehistoric relationships between the coastal and interior peoples. This is an article of importance for anyone working on the prehistory of British Columbia or of the Plateau area. The other articles comprise a summary of research and of publications in all fields of anthropology in British Columbia, a note on the occurrence of a Scottsbluff-Eden point in the Lake Windermere area, a brief ethnological paper, and an obituary of a local archaeologist.

Archaeologists will welcome this annual publication, a promising addition to contemporary journals and a tribute to our confreres in British Columbia.

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Studies of California Indians. C. HART MERRIAM. With Introduction by A. L. KROEBER. Edited by the Staff of the Department of Anthropology of the University of California. Publication of the E. H. Harriman Fund, University of California Press, Berkeley and Los Angeles, 1955. xviii+233 pp., 6 figs., 48 pls., 1 map. $3.75.

While this volume is primarily devoted to ethnographic and comparative materials on California Indians, it is not without value for the archaeologist. It is divided into 3 parts: ethnological accounts, notes on material culture, and comparative records. The 3rd section is devoted to vocabularies, tribal name variants, and mission records, and is of little archaeological interest. However, several articles in the 1st section are of considerable potential utility to the California archaeologist, locating, as they do, the sites of camps and villages. It ought to be possible to use this volume in the same way as the Classicists use the writings of the Greek geographer Pausanias. There are, in the 1st and 2nd sections, detailed accounts of such matters as the modes of burial (place, manner, and so on) appropriate to the social position of the deceased, the plans and superstructures of buildings, and the material objects of the several groups. It is hardly necessary to remind archaeologists of the part played, actually or potentially, by ethnography in the understanding and interpretation of archaeological artifacts. Few works exemplify this proposition more clearly than this posthumous collection of Merriam's notes. The publishers, finally, are to be complimented on their tastefully designed and reasonably priced product.

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Hair Embroidery in Siberia and North America. GEOFFREY TURNER. Pitt Rivers Museum, Occasional Papers on Technology, No. 7, Oxford University Press, Oxford, 1955. 83 pp., 26 figs., 16 pls., 2 maps. 15s.

Embroidery employing coarse unspun hairs is a technic of the forest and tundra peoples of northern Asia and America. The reindeer-herding groups of Asia use reindeer hair primarily, although the moose overlaps this area. In North America, moose hair, which dyes easily, is preferred, although caribou hair is used. Better known than moose and caribou hair technics is porcupine quill embroidery.

The discussion of procedure for the identification of hairs microscopically, with illustrations of the hair scale patterns for the 4 fibers, is valuable. Turner's meticulous analysis of embroidery stitches and the diagrams of these are excellent. The 16 plates are superb photographic illustrations for the text material; too often, in anthropological literature, accompanying photographs fail to illustrate. A discussion of general distribution and a chart of distribution of traits of the analyzed specimens is not, as Turner points out, exhaustive nor complete; these should act as a stimulus to other technologists.

Most interesting to American anthropologists are the descriptions of the early-dated Indian moose hair "false-embroidered" burden straps and bag in British museums. Such objects, together with archaeological specimens, can form a basis for a discussion of origins. Turner's theory of the relative greater age of the moose-reindeer-caribou hair embroidery to quill work is based on greater areal distribution of the hair technics. This use of the age-area concept seems to strike a barrier in the known archaeological age of several examples of quill work which far predate any known samples of hair embroidery. If one assumes, as seems probable, the continuous and early spread of hair embroidery from Old to New World, the porcupine quill is of necessity an addition to a known complex. If this be true, in view of quill work in Lovelock Cave, the whole complex must be a very old one. Since the distributions of the animals could explain the distribution of the technics, the age-area concept seems hardly necessary.

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The Upper Stalo Indians of the Fraser Valley, British Columbia. WILSON DUFF. Anthropology in British Columbia, Memoir No. 1, British Columbia Provincial Museum, Department of Education, Victoria, 1953. 136 pp., 3 figs., 3 pls., 3 maps.

This volume is an excellent example of what can be done even today to describe the ethnology of a strongly acculturated community by a skillful combination of field work and ethnohistorical studies. Although much has been written about the Salish-speaking "tribes" of the Lower Fraser, the information is so scattered and confusing that most anthropologists are less familiar with these tribes than with either those of the Coast or of the Interior. The people of the Fraser Valley were thrown into close contact with the white man (fur traders and gold miners, particularly) in the last century; there was no strong resistance and no withdrawal. They merely continued to live in their old areas, restricted more and more by the increasing white population, while their old life gradually gave way to the new.

The area occupied by the Stalo comprises about 100 miles of the Fraser Valley, from its mouth to the rapids near Yale. The population in 1839 was estimated at 2047; by 1915 it had shrunk to 1401, but an increase began about that time and it had risen to 1752 in 1951. Although there was no formal tribal cohesion, there were considerable cultural resemblances including virtual linguistic uniformity. The rapids on the Fraser marked a definite boundary, the upstream limit of the Stalo. But within their own area there were differences between local groups, sometimes called "tribes." Duff's first concern has been to plot the location of these groups, and to identify the names by which they have been known. This required a painstaking analysis of the literature, for, in addition to the inherent difficulty of early writers who created names for "tribes" when tribes did not exist, there are few parts of North America where native terms have been rendered in such a confusing manner. Having cleared away these geographical problems, the author proceeds to record available information on all aspects of life. He follows the conventional pattern from material culture, through economic pursuits, to social organization and religion, with relevant folktales interspersed.

Duff's work is characterized by its extreme thoroughness. Every item of information has been utilized in his painstaking descriptions. But of course the tragedy is that Duff was not there 100 years ago. Not even his diligence can bring to light the details of a culture which was not described by the early writers, and which had passed away to a great extent before the present generation of Indians was born. His facts are enough to make Stalo culture intelligible to the general anthropologist and to provide material for the regional specialist. The author, and the British Columbia Provincial Museum, are to be congratulated on rescuing so much, and recording it so clearly and logically.

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Recent Discoveries Suggesting an Early Woodland Burial Cult in the Northeast. WILLIAM A. RITCHIE. With Special Section by FREDERICK R. MATSON. New York State Museum and Science Service, Circular 40, University of the State of New York, Albany, 1955. 135 pp., 4 figs., 29 pls. $1.25.

Ritchie reports the excavation of 2 small burial sites located in northern New York State near the St. Law-

rence River, the Muskalonge and Red Lake sites. The localities, only 3 miles apart, were quite similar in content. Charred human bone fragments were found buried in deep pits and powdered hematite was frequently spread over the bones or scattered through the pit fill. Apparently these bones had first been cremated on stone crematory floors above ground before they were deposited. Grave goods were a consistent feature and many of the items had been "killed," either by burning or by breakage. Caches of thin, triangular blades were found at both sites; approximately 1725 at Muskalonge and 244 at Red Lake. Other characteristic artifacts were corner-notched projectile points, plano-convex adzes, thin slate gorgets, copper beads and adzes, bone tubes, a tubular pottery pipe, and beaver incisors that appear to have been hafted. Masses of iron pyrites (decomposed into limonite) associated with battered, triangular, chipped tools suggest the use of strike-a-lights for starting fires. A small amount of Vinette Type I pottery is also considered a part of the complex.

This complex is not unusual for northern New York State and Ritchie classifies it as an early phase of Point Peninsular, related to the Gravel Kame culture of Ontario, Michigan, Ohio, and Indiana, and to the Red Ocher focus of Illinois. He points out that this early burial complex introduces a number of items previously unknown in the preceding Eastern Archaic and suggests that they are a stimulus-diffusion reflection of traits coming from Asia which ultimately culminate in the Adena, Hopewell, and related cultures. In advancing this hypothesis Ritchie places considerable emphasis upon a radiocarbon date from Red Lake of about 2448 B.C. ±260 years. An interesting comparison to dates from related manifestations is given in Figure 4.

Almost as fascinating as the study of evolution and drift of prehistoric cultures is a consideration of the drift of opinion among the archaeologists themselves. Twenty or even 15 years ago Ritchie's colleagues would have laughed at him. Now numerous bits of new evidence have changed the climate of opinion to the point where this interpretation will be considered worthy of very serious consideration. However, many investigators will be reluctant to accept the results derived from one carbon sample as fixing the date for this complex. Personally I would guess that both this date and the one obtained for the Old Copper complex are much too early.

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Spring Lake Archeology — Point Profiles. LOUIS H. POWELL. Science Bulletin No. 3, Part 1, The Science Museum of the St. Paul Institute, St. Paul, 1955. 5 pp., 1 fig., 9 pls., 1 map. $1.00.

This brief study presents a uniform, objective technic of recording point outlines for comparative purposes, and suggests a statistical method for setting up point outline types. It is the first of a projected series of publications on the archaeology of the Spring Lake area near the Twin Cities in Minnesota. In the technic presented, the outlines of bilaterally symmetrical points are reduced or enlarged to a uniform size and charted on a grid. The distinctive feature of the technic appears in the next step, in which any asymmetry in the specimen is reconciled by drawing an average half-profile, based on the outlines of the 2 sides. This half-profile, which "minimizes the effect of chance in giving shape to a point and emphasizes deliberate design," is published along with data on actual dimensions and provenience.

The technic is unavoidably cumbersome, and for this reason its practical applicability to large collections may be questioned by many workers. However, Powell makes a good case for precision and objective comparability in the presentation and analysis of this sort of information. He suggests that "it is possible, by carefully measuring, recording, and averaging offsets at similar positions from the center line on the profiles of a series of similar points, to construct a statistically reliable, average profile . . . [which] would provide a much more realistic and valid method of recording point types than that currently in vogue."

The publication deserves close consideration by students faced with problems of projectile point classification.

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The Plains Anthropologist, Number 2. Edited by FRANKLIN FENENGA. Plains Conference for Archeology, Lincoln, 1954. 37 pp., 1 fig. $1.00.

The Plains Anthropologist is "A Medium for the Publication of the Results of Anthropological and Related Research in the Plains." It is edited by Franklin Fenenga at the Laboratory of Anthropology of the University of Nebraska. The issue under review completes the first year of publication. That regional journals of this sort can serve a real need is, I think, clearly shown by the contents of Number 2.

The first article, Richard P. Wheeler's "Check List of Middle Missouri Pottery Wares, Types, and Subtypes," is a straightforward compilation to be used by archaeologists working in the Middle Missouri area. For this group, the check list provides a convenient summary of names applied to various kinds of pottery and clears up the small amount of nomenclatural confusion which has developed. The second article, "Plains Indian Feathered Bonnets," by James H. Howard, is a short descriptive résumé. In a longer article G. Hubert Smith summarizes the archaeological field work at a late historic village of the Mandan, Hidatsa, and Arikara, discusses the historical background of the site, and gives a preliminary glimpse of the results. The final article, D. D. Jensen's "A Proposed Statistical Study of Phenotypic Variation in Human Populations," consists of a general description of a research design for tackling

the problem of description of race difference in a straightforward and scientific manner. It would also seem desirable to apply Jensen's rationale to the skeletal material produced by archaeological excavations, and archaeologists may see fruitful analogies with cultural problems.

Although these articles deal with diverse topics, they have in common certain qualities which make them eminently suited to a specialized journal, or to reverse the statement, not well suited to AMERICAN ANTIQUITY or the *American Anthropologist*. Wheeler's check list and Howard's description are clearly directed at the areal specialist. Regional emphasis is also apparent in Smith's article, and in addition his intention is to make available a preliminary account of the major results of the excavation. Jensen's essay has no particular regional implications; it is rather a first statement of an idea, and its publication serves to invite comment from a comparatively small group of readers. The ideas and information presented are useful raw material from the standpoint of general anthropology, and the particular contribution of *The Plains Anthropologist* is to make them available at an earlier stage than would be possible for the journals designed for a more heterogeneous readership. The ultimate result will be better general papers.

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Archeological Investigations in the Oahe Dam Area, South Dakota, 1950-51. DONALD J. LEHMER. With appendices by THEODORE E. WHITE, NORTON H. NICKERSON, AND DING HOU. Bureau of American Ethnology, Bulletin 158, River Basin Surveys Papers, No. 7, Inter-Agency Archeological Salvage Program, Smithsonian Institution, Washington, 1954. xi+190 pp., 56 figs., 22 pls., 6 maps. $1.50.

This is a report on the excavations of the Dodd and Phillips Ranch village sites on the west side of the Missouri River near Pierre, South Dakota. Lehmer provides both the best report on sites in the Middle Missouri to date and a chronological framework for the area. In addition he presents a theoretical reconstruction of the prehistoric "traditions" of both the Central Plains and the Middle Missouri areas which is probably the most important contribution to Plains archaeology since Wedel in 1947 and Strong in 1940 synthesized the then-known materials.

The 3 components at the Dodd site provide the chronological framework for Lehmer's Fort Pierre branch. These components, Monroe, Anderson, and Stanley, have been submitted tentatively as foci. The excavations at the Phillips Ranch site disclosed a later component, the Snake Butte focus. (After Lehmer's report went to press both Stanley and Snake Butte were dropped as foci names by agreement at the 10th Plains Archeological Conference). Lehmer uses these 4 stratigraphically and typologically distinct components to define a 6-period sequence for the Fort Pierre branch. He recognizes the probability that a period following the Anderson focus will be added eventually to the chronology. The chronology established by Lehmer begins with the Monroe focus, the earliest component at the Dodd site, which is followed stratigraphically by the Anderson focus. No dates have been suggested for these early foci, or for the beginning of the sequent Thomas Riggs focus. European artifacts make it possible to assign dates to the other foci: Meyer-LaRoche 1600 to 1700, Stanley 1700 to 1750, and Snake Butte 1750 to 1800.

Lehmer defines a basic post-Woodland "Plains Village Pattern" which includes 3 broad village traditions. The 2 earlier traditions, which are contemporaneous, are spatially differentiated in the Central Plains and the Middle Missouri. The 3rd tradition, Coalescent, is late prehistoric and historic and is a fusion of the 2 earlier traditions. However, this coalescence occurs primarily in the Middle Missouri as a result of the abandonment of the Central Plains during one of the periods of extreme drought. Although this excellent synthesis of Plains chronology provides some validity to the solution of many, as yet, vague problems, a few items should be brought to the attention of readers. The concept of a fusion or coalescence in the Plains is not as new an idea as Lehmer implies. As early as 1940 both Strong and Wedel pointed out (Smith. Misc. Coll., Vol. 100) that there is an Upper Republican or Nebraskan influence in the Mandan, Arikara, and Lower Loup (Pawnee) pottery. In 1946 Champe saw evidence at Ash Hollow Cave of an influence into the Middle Missouri and back to the Central Plains *during* Upper Republican times. A fusion or coalescence resulting from 2 distinct, mutually exclusive traditions is not, perhaps, quite accurate if one considers the possibility that the Middle Missouri and Central Plains areas were probably closely related from the beginning of Woodland times. The evidence at present indicates that most of the traits in the Plains had a southern or southeastern origin. Certainly the agriculture which was practiced in regions as far north as the Dakotas must have its beginnings in the south. Moreover, the division between the Middle Missouri and the Central Plains areas is arbitrary, not geographical, for there are no natural barriers to prevent the movement of people.

Lehmer's dating of 1539-1564 for the terminal end of the Upper Republican in the Central Plains is questionable and, perhaps, too late. Evidence is rather weak for the terminal dating of the entire Upper Republican even with the evidence elsewhere in the area of a drought and the presence of a sterile blanket of loess over all Upper Republican sites. Moreover a sterile deposit of loess is not a reliable time indicator. Wedel (AM. ANTIQ., Vol. 14, p. 329) states that a time span of ca. 1475-1675 has been suggested for the Great Bend aspect. Since this aspect follows the Upper Republican aspect in time, it would not seem justifiable to place a *terminal* date on Upper Republican in the Central Plains at 1539-1564. There is undoubtedly much more spatial and temporal confusion here than is immediately

apparent. The Arzberger site, which is basically Upper Republican but located in the Middle Missouri, is spatially out of context. This unique site has received much attention in the past, since it seems to be rather difficult to justify its location and to place it in the Midwestern taxonomic scheme. Lehmer states that this site was occupied by a mid-16th century group of basic Upper Republican affiliation which migrated into the Middle Missouri area. However, it would appear that if this site were characteristic of the Coalescent tradition, the coalescence must have been well underway in the Kansas and Nebraska regions of the Central Plains long before a coalescence began in the Middle Missouri area. Although Lehmer used Champe's *Ash Hollow Cave* as a reference for his terminal dating of the Upper Republican occupation in the Central Plains he did not adequately consider Champe's suggestions or implications regarding the possibility of an Arzberger-like influence *into* the Central Plains from the Middle Missouri *during* Upper Republican times rather than afterwards.

The illustrations of many of the artifacts and the diagrams would have been more illuminating if they had been full-page in size. The small cuts are difficult to use for comparative purposes. Also, the artifacts illustrated by group rather than by provenience or component makes comparative analysis practically impossible. The decorated bone tubes in Figure 52 which are identified as "Dog (?) bone" appear to be the humeri of large birds. [EDITOR'S NOTE: Metcalf, elsewhere in this issue, confirms this identification.] Scapula hoes with glenoid fossa removed have been excavated in Upper Republican sites in the Medicine Creek, Nebraska, and should be traceable back into one of the antecedant complexes. Lehmer states that there are 37 rim sherds from the Stanley focus and 90 from the Phillips Ranch site which are unclassifiable and unidentifiable. Many of the sites in the Northern Plains and Middle Missouri areas yield such a small amount of pottery during this late time period that these sherds should have been described. Although they do not fit into any of the pottery types set up for the sites discussed, they might be of value in indicating cultural contacts, particularly to the north. One might justifiably ask why the sunflower seed is not included along with corn, beans, and squash in the basic subsistence for the Central Plains. Although the sunflower seed is not reported from the lower levels of the Dodd site it is present later in the Middle Missouri.

One should be cautious in accepting a simple or general scheme for the major chronological developments in an area as large as the Plains. That there are many more implications and suggestions involved in the various migrations and movements of Plains tribes, perhaps due to droughts, is obvious; also, there are other valid theories of routes and times of migrations which must be investigated before this 3-fold tradition scheme is accepted. Nevertheless, Lehmer's use of the total complex in setting up his divisions and in comparing them is scientifically sound and constitutes a definite contribution to the present confused state of Plains archaeology.

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32ND INTERNATIONAL CONGRESS OF AMERICANISTS

The International Congress of Americanists will hold its 32nd meeting in Copenhagen, Denmark, on August 8 to 14, 1956. The sections planned include American Indian ethnology, Eskimo ethnology, American Indian archaeology, Eskimo archaeology, linguistics, physical anthropology, exploration and colonization of the Americas, and folklore.

Subscription to the Congress will be $10.00 for full members (who will receive the published proceedings); each full member may enroll not more than 2 associates, at $5.00 each.

Papers will be limited to 20 minutes each, with no more than 3 papers by any member. Titles and abstracts should be in the hands of the Secretary-General not later than May 1st, 1956. Inquiries concerning hotel accommodations, membership, and other details should also be sent to the Secretary-General, Jens Yde, National Museum, Ethnographical Department, Copenhagen K, Denmark.

VTH INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES

At the invitation of the American Anthropological Association and the University Museum, University of Pennsylvania, the Vth International Congress of Anthropological and Ethnological Sciences will be held at Philadelphia, from September 1 to 9, 1956. One paper will in principle be accepted from each participant, without prejudice to additional contributions requested for presentation at General Sessions. Abstracts should be in the hands of the Program Chairman, M. J. Herskovits, Department of Anthropology, Northwestern University, Evanston, Illinois, by March 1, 1956. No papers with a lengthier oral reading time than 20 minutes will be accepted for publication, and publication cannot be guaranteed.

Rooms in University buildings will be available to members at $2.50 per night. Registration fee is $10.00; members will receive the published proceedings of the Congress. Relatives of members may become Associate members by paying a fee of $3.00, which entitles them to attend sessions and all other events.

Inquiries should be addressed to the Secretary, American Organizing Committee, International Congress of Anthropology, National Academy of Sciences–National Research Council, 2101 Constitution Avenue, Washington 25, D.C. Cable address NARECO.

NOTES AND NEWS

EDITED BY CLEMENT W. MEIGHAN

GENERAL

The summer of 1955 was an exceedingly active and productive field season for American archaeology. A few statistics on the projects reported here for the summer are a good demonstration of the growth experienced since World War II. The figures are not precise, because not all projects get reported in NOTES AND NEWS, and because various details are sometimes omitted from the reports. However, a reasonable approximation to work accomplished is reported, and the figures for this are quite impressive. They include (for summer 1955 only):

Institutions and organizations sponsoring field work: 58

Survey projects: 26

Excavation projects: 56

Field Schools: 10

Number of persons in the field during the summer: at least 300.

In addition to this field activity the meetings of the Pecos Conference, the Great Basin Conference, and the Ohio Valley Archaeological Conference were held during the summer. Four special seminars sponsored by the Carnegie Foundation also met in different parts of the country. The analytical work thus made some attempt to keep up with the digging.

Although comparative figures are not available for other years, it is clear that the 1955 season must be near the record for summer activity.

Some new areas were investigated during the summer, but much of the work continues to be concentrated in better-known regions such as the Southwest (5 of the field schools were here), and the high-culture centers of Mesoamerica and South America. Large areas of the New World remain unexplored archaeologically, and a greater diversification of effort would be rewarding.

NORTHEAST

ONTARIO. In cooperation with the University of Toronto, the Royal Ontario Museum of Archaeology excavated the so-called Serpent Mounds at Rice Lake. Under Kenneth E. Kidd's general supervision and direction, W. Richard Adams conducted the field work. Preliminary explorations and the mapping of the site were the principal activities. Continued work is anticipated during the 1956 season. The existence of these mounds, a rare manifestation in Ontario, has been known for many years. No definite statement as to their content has yet appeared.

NEW YORK. The New York State Museum and Science Service began a major program of survey and excavation on Long Island, where rapid expansion of population is destroying numerous archaeological sites. Following a preliminary reconnaissance by William H. Sears, William A. Ritchie with a crew of 3, during August, excavated an extensive habitation site near Stony Brook, on the north shore. This site appears to be of considerable significance in the eastern New York area because it is one of the very few components of the little-known, apparently Early Woodland complex, characterized almost exclusively by the use of the narrow-bladed, "fishtail" type of point, a primary marker for the Orient focus. This focus has so far been defined only on the basis of 4 burial sites on eastern Long Island exhibiting what Ritchie has described as the "northern burial cult."

Several other Long Island sites were tested and will be excavated next season.

During the past summer a new publication appeared — *Bulletin of the Nassau Archeological Society*, Vol. 1, No. 1. Its contents will be of particular interest to students of southern New England and greater New York City, archaeology. Lawrence M. Conant, 72 Hilton Ave., Garden City, Long Island, N.Y., is the editor. In this issue reports on the activities of the society's members are accompanied by comments on the archaeological sequence in coastal New York and on kaolin pipes bearing the initials "TD." Edward D. Patterson reports that continued work in the Garvie Point site on Glen Cove, L.I., indicates an archaic occupation. He also notes that the Muskeota Cove site on Long Island is being investigated and Orient-like material is being found in the lowest levels. Julius Lopez has compiled the information available on the Schurz site located on Throgs Neck in Bronx County. Here recent excavations by Harry Trowbridge and George Younkheere and others have provided a number of potsherds, postmolds, and lithic materials. His study of the sherds indicates a series of occupations ranging from the North Beach focus of the Windsor aspect to the early Clasons Point focus of the East River aspect. The work on the site is hindered by modern structures and the remains of a colonial dwelling.

NEW JERSEY. The RCA site near Princeton Junction in New Jersey was excavated during late July and August under the sponsorship of the David Sarnoff Research Center, Radio Corporation of America, by the Archeological Society of New Jersey, State Museum, Trenton. Under the supervision of Dorothy Cross, the work was conducted by Donald D. Hartle, of Hunter College. This is a stratified site producing steatite vessel fragments in the lower levels. Steatite-tempered potsherds also were present as were later pottery types. This site is one of the less disturbed sites in New Jersey and appears to have been occupied during the Archaic, Early Woodland, and late periods.

NINTH CONFERENCE ON IROQUOIS RESEARCH

The usefulness of the informal research conference for exploring some central theme for identifying new research problems and for reporting research accomplished was again achieved October 14-16 when students of the Iroquois Indians of New York and Ontario met for the ninth time in 10 years at Red House, New York, to discuss the theme of "Exploring Ways of Achieving Cooperation in Anthropological Studies in the Northeast." This theme provided a vehicle for discussing state and local relationships in archaeology, professional and amateur responsibilities in archaeology and ethnology, the roles of local and regional museums, relationships between universities as training centers, and the opportunities provided by the conference for field work. The conference was limited to 35 invited participants who had recently contributed to the advancement of Iroquian research, of whom 28 attended. The Red House conferences are traditionally family affairs and until the rains of this year, the glorious autumn weather has made these weekends a pleasant outing. For the continued use of the administration building and quarters of the Allegany State Park, the conference is again indebted to Charles E. Congdon, chairman of the Allegany State Park Commission, and to M. H. Deerdorf of Warren, Pennsylvania, who was host at the "doings" of the Very Little Water Society.

The annual Iroquois Conference owes its inspiration to the late F. G. Speck and has from the beginning been organized and chaired by W. N. Fenton, who this year was assisted in planning by W. A. Ritchie and C. E. Gillette. The conference has no formal organization and no regular members. The attendance comprises mainly anthropologists, many of whom are part time workers in archaeology, ethnology, language, and history — the only prerequisite being an active and contributing interest to some phase of Iroquoian studies.

The agenda included a discussion of state and local relations led by John Witthoft, Pennsylvania Museum Commission; professional and amateur relations led by William A. Ritchie, State Archeologist, New York State Museum and Science Service; museum and university relations, Irving Rouse, Yale University; ethnologist and Indian, Anthony F. C. Wallace, University of Pennsylvania; and the structure of suppport, W. N. Fenton. This discussion lasted throughout Saturday and was actively engaged in by everyone present. Those who did not have a chance to say all that occurred to them in meeting carried on in small groups far into the night. On Sunday morning we heard from the "new voices" in Iroquoian research who were introduced by Wallace. These included Jacob Gruber, Temple University, Philadelphia, on a study of artistic styles in Iroquois masks; Cara B. Richards, Cornell University, on a study of women's roles at Onondaga; David Landy, Department of Social Relations, Harvard University, on child rearing practices of the Tuscarora; Anne Marie Shimony of Yale University, on the longhouse communities of Six Nations Reserve, Ontario.

The chairman summarized the high points of the conference as follows:

1. The need had been identified for an archaeological extension service from the New York State Museum and Science Service to local societies, schools, and collectors of New York antiquities.

2. The present type of conference on the theme of improving state and local relationships in antiquities of New York should be repeated at the local level, and such additional conferences are contemplated.

3. Sentiment favored education and diffusion of professional scientific knowledge to the use of legal sanctions to prevent vandalism of sites and it was held that an antiquities act would be unworkable.

4. National universities like Yale and Toronto should encourage research by state and local museums but must evaluate these programs in the light of national responsibilities. And, it is recognized that Iroquoian studies in archaeology, ethnology, and linguistics have provided part-time research opportunities for the faculties and an opportunity for the training of graduate students.

5. It was evident that in arriving at an over-all program for the conference one must know the number of students available in the universities of the area and what parts of the program each university would assume. There is a need to identify a few solid projects in language, social relations and political organization, personality studies, and archaeology to show how the main concept of conservatism can be studied in relation to change, using the Iroquoian field as a laboratory.

6. From the "new voices" came the suggestion of a clearing house of research in progress and in the recent past so that young scholars might make their choice to approach the field in an intelligent manner.

The discussions and recommendations on Saturday and Sunday followed the presentation of one solid paper which was appropriate to the theme for the conference and was delivered this year by the Very Reverend Thomas Grassmann of the Mohawk-Caughnawaga Museum at Fonda, New York, on "The Excavation of Historic Caughnawaga." Father Grassman's talk was illustrated by slides and highlighted, very appropriately, excellent cooperation between professional and amateur scholars in a local setting.

Of the conference, this year, 2 things can be said: the conference identified a new field of research in the area of Indian education which is in the trend of the times when education and anthropology are finding common research interests. In the selection of the theme and in the candor with which it was discussed the conference touched one of the significant problem areas in the organization of scholarship: how to foster good communication between national, state, and local levels of the community of science without control flowing from the top; and provide the amateur, part-time scholar with a sense of full participation.

EDITOR'S NOTE: The preceding conference report was prepared by William N. Fenton. A more detailed report of the archaeological discussions during the conference will appear in the next issue.

NORTHERN MISSISSIPPI VALLEY

ILLINOIS. Southern Illinois University sponsored a 2-month field session in the Cache River valley under the supervision of Howard D. Winters, who was assisted by a staff of specialists from the university and a group of 9 students from several schools. A considerable portion of the work was financed by a grant from the National Science Foundation, with J. Charles Kelly as the senior researcher in charge of the Cache River Valley Project.

The field work was undertaken as part of a long range program which will study the adaptations of the successive occupations of the Cache River valley to a single, although changing, ecological zone. Excavations during the present season were made in 3 sites pertaining to Archaic and Early Woodland occupations. In addition numerous surface collections were made on sites in the northern and central portions of the valley. These sites produced material ranging from Paleo-Indian to Late Woodland occupations. Practically no Mississippian material was found in the areas surveyed. Preliminary analysis of the material has given interesting clues to the interpretation of occupation patterns and ecological adjustments within the valley. Intensive study of the artifacts is scheduled during 1955 and 1956, with assistance to be provided by a number of specialists. Ultimately the data from this area will be integrated into a program designed to study adaptations of early hunting-gathering groups to differing ecological zones and successive changes in environment in the eastern United States.

On August 20 the Illinois State Museum concluded the first season of a proposed 3-season excavation program at the Modoc Rock Selter. This rock shelter, test excavated in 1953, yielded dates of 9000 to 10,000 years ago from the lowest levels.

Over half of the site was excavated to 19 feet below datum level. Since the surface of the site varies this meant excavations varied from 2 to 10 feet in depth. An abundance of artifacts and other remains were collected. The artifacts indicate that the zones excavated belonged primarily to an Archaic period dating from approximately 2000 to 3000 B.C. Several flexed and bundle burials were excavated. Postholes indicated windbreaks around several fireplaces.

A major part of the work during this season was the testing of the soil deposits at the site for pollen. These tests were successful and pollen analysis will be a major part of future research at the Modoc Rock Shelter. John S. Tarr, a graduate student at the University of Arizona, served as geochronologist and made the tests for pollen. A botanist was in the field during the summer and made collections of present day flora which will be the basis of comparative study. Seeds of ragweed and hackberry have been identified from the fire pits.

Mechanical sifters and a conveyor belt were used and sped the work considerably, with better preservation of fragile material than was obtained through hand screening. The field work was carried out by a crew of 14 students with Melvin Fowler as Director and Dick Keslin as Assistant Director.

MISSOURI. The University of Missouri was awarded a research grant of $22,500 by the U. S. Park Service, Region 3, to conduct salvage excavations in the Table Rock Reservoir area, Barry County, Missouri. The field work will be supervised by Carl H. Chapman, Director of American Archaeology at the University of Missouri.

Two other University of Missouri field parties under the direction of Richard A. Marshall and Robert T. Bray have been working in the Table Rock area throughout the summer. Five shelters, 2 caves and a rock cairn were investigated by these parties.

A grant from the Missouri Archaeological Society sponsored the excavation of a cave in Calloway County. J. Mett Shippee, who has been in charge of the excavation has found that the site may well be comparable to Graham Cave. So far there is evidence of 3 cultures, one of which ties in with the Graham Cave early man horizon.

Richard O. Keslin has been added to the staff of the Department of Sociology and Anthropology in the positions of Director of the Museum of Anthropology and Instructor in Anthropology.

OHIO. The Ohio State Museum and Ohio State University cooperated in an excavation of a large Adena mound. The site, known as the Niles-Wolford mound, is located approximately 6 miles northwest of Circleville, Ohio, near the village of Fox. Exploration revealed 2 subfloor tombs beneath the mound. The larger tomb, measuring 15½ feet in length, 8½ feet in width, and 3½ feet deep, contained 5 extended burials; the smaller tomb contained 2 extended burials and a reburial deposit of bones. Burials in both tombs were wrapped in textiles and placed between layers of bark. Large stemmed spear points, worked pieces of deer antler (atlatl handles), and bone awls were among the burial associations. The work was under the direction of Raymond S. Baby, Curator of Archaeology, assisted by Robert M. Goslin, with 8 university students.

At the second meeting of the Ohio Valley Archaeological Conference since its organization in 1953, archaeologists from Pennsylvania, West Virginia, Ohio, Kentucky, Indiana, Illinois, and Missouri met at the Angel Mounds, August 12-13. The general theme of the informal sessions was the Mississippian manifestations in the Ohio Valley with emphasis on the Angel site. The conference host, Glenn A. Black, conducted a tour of the site and exhibited the fine collections of artifacts recovered there. Brief reports were presented by the delegates on current field work in their areas. Chairman of the conference was William Mayer-Oakes, Carnegie Museum, who was re-elected for 1956. The editor, John W. Bennett, Ohio State University, was also re-elected. Raymond S. Baby will serve as secretary-treasurer for 1956.

WISCONSIN. Warren L. Wittry, Curator of Anthropology, State Historical Society of Wisconsin, spent the month of August, 1955, in the excavation of 4 rock-

shelter sites in Sauk County. The work was sponsored by the Wisconsin Archaeological Survey. At 3 of the sites operations were limited to testing, while at the 4th site the rather extensive excavations begun in 1954 were continued. All of the sites investigated are stratified, with one of them having a deposit over 9 feet in thickness and evidence of occupation as deep as 7½ feet. The bulk of the materials found represent the Archaic, Middle, and Late Woodland periods and their analysis will provide important information on these periods in central Wisconsin.

SOUTHEAST

FLORIDA. The Department of Anthropology and Archaeology of Florida State University conducted a summer field season in the vicinity of Ocklockonee Bay, Wakulla County. Most of the time was spent in a re-examination of the Nichols site, excavated by C. B. Moore in 1901. The mound proved to be predominantly Weeden Island II with Fort Walton period intrusions. Burials were confined to the upper part of the mound above a shell mantle. C. B. Moore dug a peripheral trench of varying width around the mound but left the central portion untouched.

A small test in the Simmon's Lodge midden indicated a time span from Deptford to Fort Walton. A wall trench was traced for 15 feet and is probably a part of a Weeden Island structure.

Survey in the Ocklockonee Bay area located a few additional sites, largely in the Weeden Island periods. Many shell middens have very little cultural material and are apparently only shell collecting stations.

GEORGIA. The Columbus Museum of Arts sponsored 6 weeks exploration at the Ruud Plantation site on the lower Chattahoochee River below Columbus during July and August. Joseph R. Caldwell was in charge of operations with several volunteer assistants from Fort Benning. The summit of Temple Mound A was cleared to disclose parts of 5 building units and a wattle-and-daub wall around the top of the mound. Caldwell is preparing a preliminary report for *Early Georgia*. The occupation on top of Mound A appears to have belonged to a Lamar-like culture with strong Savannah resemblances. A deeper occupation is strongly reminiscent of Macon Plateau. Some Fort Walton materials are intermingled with the more recent Lamar focus.

David W. Chase, a volunteer with Caldwell at the Ruud Plantation site, reports a large Early Swift Creek site at Hallocka Creek on the Fort Benning reservation. Surface collections and materials from stratigraphic test pits are to be studied at the University of Georgia. This site is of particular interest as Early Swift Creek sites are very rare in Georgia. The Hallocka Creek site shows an Early Swift Creek assemblage, with some Deptford check and simple-stamped wares, duplicated somewhat in the Santa Rosa–Swift Creek horizon of northwest Florida. Also present, apparently in good stratigraphic context below the Early Swift Creek levels, is fiber-tempered pottery and a presumptive late Archaic or prepottery horizon.

Vernon Hurst, geologist with the State Geological Survey, and A. R. Kelly continued laboratory study of the factors of decomposition in selected weathered flints, cherts, and quartzites. Currently large stemmed projectile points of a metamorphosed siltstone or sandstone, dubbed "aplite" in some reports and generally found in a Stallings Island context, are receiving special attention. Still more detailed study of the microstructure of flint and chert will be possible as soon as X-ray equipment is installed in the new state offices now being completed.

A. R. Kelly continued explorations for the second season on the west Mound B periphery and plaza area at Etowah Mounds State Park. Two additional Etowah period "trash pits" or saucer-like depressions were uncovered along with a portion of a second Wilbanks house pattern. The 2 field seasons now provide a generous stratigraphic picture of Etowah chronology in terms of ceramics, relationship of Mound B structure to superimposed house floors in the village area, and the premound occupation. It is certain that the last period of mound building occurred in the Wilbanks period. A rich premound midden approximately 2 feet thick, plus accumulated fill in a premound saucer-shaped depression, 12 feet in diameter and 5 feet deep, indicate that Mound B was built in the Etowah IV and Wilbanks periods. An Etowah IV period house, with parallel post supports and no wall trench, was partially uncovered in place over the fill of one of the Etowah "saucers." After the Wilbanks occupation, along the west slope of Mound B, extending out into the presumed plaza area, occurs an occupation which is neither Wilbanks nor North Georgia Lamar, since it lacks entirely Lamar rim features and incised pottery. This epi-Wilbanks or "early Lamar" has been tentatively called the "Tumlin" period. It overlies a 1-foot thick orange clay loam "platform" which extends west from the original feather edge of Mound B, with Etowah and Wilbanks deposits in position beneath it.

Phillip E. Smith assisted during July at Mound B, Etowah, and during July and August carried out a survey at Fort Mountain State Park, Chatsworth, for the Department of State Parks and the University of Georgia. The Fort Mountain survey was extended to other sites in the general piedmont area where stone walls and prehistoric stone structures had been reported. Smith, A. R. Kelly, and Joseph W. Johnson of Chattanooga visited key sites, doing some aerial reconnaissance and photography. Included in this survey were stone circles in Putnam County originally reported by A. R. Kelly and still more recent discoveries of "circles" in Habersham County. Phillip Smith will prepare a preliminary survey report this fall.

Clemens De Baillou continued survey at New Echota and visited Oklahoma's various historical societies and museums with Henry Malone, historian with the Atlanta Division of the University of Georgia. They uncovered additional information on the Council Chamber at New Echota.

OKLAHOMA. A University of Oklahoma field party under the direction of Robert E. Bell spent 6 weeks excavating in a small portion of an extensive Fulton period site. The site, which includes mounds, extends along the west bank of the Glover River in McCurtain County.

SOUTHWEST

The 1955 Pecos Conference was held at the Laboratory of Anthropology in Santa Fe on August 15, 16, and 17. The conference was welcomed by Boaz Long, Director of the Museums of New Mexico, and Stanley Stubbs, conference chairman. The opening meeting on Monday afternoon was devoted to archaeological reports on the summer's field work. Robert Lister, of the University of Colorado, was chairman. A summary of the reports, given by states, follows:

UTAH. James Gunnerson and Dee C. Taylor reported on survey and excavation in the Fremont culture area. [See NOTES AND NEWS, Great Basin, this issue for details.]

Clement Meighan of UCLA excavated a puebloid site near Paragonah. This is the second year of excavations in a large village area which originally contained over 400 trash mounds. Adobe granaries and pit-house structures were uncovered. The site is believed to date into the 1200's.

COLORADO. Robert Lister, of the University of Colorado, directed the Department of Anthropology's third summer field school at Mesa Verde National Park. Fifteen students excavated in a late Pueblo II to early Pueblo III ruin on the mesa. The rooms excavated will be stabilized to form part of the permanent exhibit at the park.

Joe Ben Wheat, of the Colorado University Museum, excavated in a Basketmaker III site on the Yellowjacket River. Six structures, a small antechamber pit house, and 5 surface granaries were dug as well as part of a great kiva.

Herbert Dick, of Trinidad Junior College, reported that that institution and the Harvard Botanical Museum are jointly sponsoring a permanent camp on the Purgatory River in eastern Colorado. Work was undertaken in Trinchera Cave which produced a long stratigraphic sequence including both ceramic and nonceramic material.

NEW MEXICO. The University of New Mexico ran 3 digs during the summer. Work at Pottery Mound produced a beautifully painted kiva. At the preceramic Lucy site in the Estancia Valley, both Clovis and Sandia points were uncovered in situ, as well as later preceramic types, in association with elephant, bison, horse, and mastodon bones. With the later "Pinto-like" points were hearths, handstones, and milling stones. A 5-week excavation in the Gallina area uncovered 3 pit houses and a tower of stone and adobe with tunnels leading from the pit houses to the tower. In addition, thick-walled rectangular rooms and slab-walled granaries were excavated.

Fred Wendorf of the Laboratory of Anthropology reported on the highway salvage archaeology program which has resulted in 26 sites partially or completely excavated. The National Forest Service and the New Mexico Game and Fish Commission are cooperating in this program. Stewart Peckham described 2 Tularosa River sites of Pueblo II to Pueblo III period encountered in highway salvage work. They appeared to have both pit houses and pueblos occupied at the same time. Three Pueblo I-II sites, one with rectangular pit houses with Lino Gray and San Francisco Red and 2 with round pit houses, surface storage rooms, and Lino Gray, Red Mesa Black-on-White, and Kana'a Gray were excavated near Albuquerque. Three sites were excavated near Tesuque. One was a nonceramic saucer-shaped pit house, the second a small adobe-walled pueblo with a deep kiva, and the third pit houses below a Santa Fe Black-on-White period pueblo with a circular kiva.

Charlie Steen of the National Park Service described work in a small stratified cave site on Pigeon Creek near a swampy area. Archaic horizon points, adobe-lined fire pits, a microblade, and fossil bison, were stratigraphically above Clovis points, crude choppers, and small fire pits.

Stanley Stubbs, of the Laboratory of Anthropology, spoke on advising local archaeological groups and mentioned that the Taos Society is excavating a Pueblo II pit-house village. He also told of work by the laboratory done in 2 historical period sites in Santa Fe. At San Miguel Church a pre-1628 church foundation was found to underlie the present church which dates from 1710. At the south side of the Plaza, a military church foundation was uncovered. The original shape of this cruciform church, dating from the 1750's, was formerly unknown.

Richard B. Woodbury and Nathalie F. S. Woodbury, of Columbia University, continued with the second season's work at El Morro National Monument. A circular kiva in the Pueblo IV ruin, partly excavated last year, was completed and analysis of material from the site begun. This ruin is being stabilized by the National Park Service.

Alan P. Olson reported on the work of the Chicago Natural History Museum under Paul Martin on the Blue River where a portion of an early Pinedale phase pueblo was excavated. This is the latest sign of Pueblo occupancy in this area.

ARIZONA. Edward B. Danson reported on the tenth annual season of the University of Arizona and the Arizona State Museum's archaeological field school at Point of Pines. Excavations were continued under the direction of Emil W. Haury in the large Pueblo III-IV ruin, where 11 more rooms were excavated. A 5-room cave site was excavated by the James Giffords which produced dry materials of the 1300's. A nonceramic site was excavated by Haury which produced an assemblage of artifacts, points, protopalettes, pipes, and cremations which suggests a pattern of culture that could have led into the Hohokam. David Breternitz, 1955 dig foreman, reported on the second year's excava-

tions in an A.D. 900-1000 period pit-house village near Point of Pines which produced square, shallow pit houses, as well as later crude small pueblos. Two great kivas were excavated at this site.

Robert Euler, of the Museum of Northern Arizona, reported on historic Walapai sites and told of an archaeological survey near Inscription House where over 100 sites, mostly of the Pueblo II period, were located. Geologists participating in the survey are working on the correlations of archaeology and recent geological events. In a survey conducted for the Museum by Douglas Schwartz of the University of Oklahoma, 100 sites were also located in the Grand Canyon area. These were both Anasazi and Fremont in culture as well as Walapai.

Robert Fournier reported that John McGregor of the University of Illinois and the Museum of Northern Arizona cooperated in a second season's excavations in the Pollack site, a Pueblo III Sinagua pueblo south of Flagstaff.

TEXAS. Jack Hughes spoke of the archaeological survey conducted by the Panhandle-Plains Museum and Archaeological Society. Sites encountered included rockshelters, campsites with a Pueblo-Caddo cultural mixture, and early man sites.

MEXICO. Edwin N. Ferdon, of the Museum of New Mexico, reported on an archaeological reconnaissance in the Tarahumara area of the Sierra Madre where the Indians are still occupying cave sites. He also reported on a temple at the La Quemada site which closely resembles the ground plan of the Great House at Casa Grande National Monument, Arizona.

Jesse Nusbaum archaeological consultant, National Park Service, reported on his work during the past year. Six pipeline surveys have been underway during the year, covering large areas of the Southwest.

The afternoon session of August 16 was devoted to a factual summary of upper Rio Grande archaeology. This was ably presented by Stanley Stubbs and covered present day archaeological knowledge from the early man finds up to the historical period. Fred Wendorf indicated problems still to be solved and periods and areas still needing work.

Wednesday morning, August 17, the Society for American Archaeology seminar working on the topic "The American Southwest, A Problem in Cultural Isolation," reported on its deliberations. Jesse Jennings and Erik Reed co-chairmanned the seminar which also included Clement Meighan, J. C. Kelley, J. B. Wheat, James Griffin, and Stanley Stubbs. Emphasis was on the new evidence of close Mexican influence on the Southwest and actual movements into the area from Mexico during the 700's, 1100's, and 1400's, bringing in ceramic, architectural, and ceremonial features.

The Museum of Northern Arizona has extended an invitation to the Conference for the 1956 meeting. The Interim Committee appointed for 1956 consists of Malcolm Farmer, Chairman, Thomas Cain, and Fred Peck.

SOUTHWEST CERAMIC DEPOSITORY

The Northern Arizona Society of Science and Art has designated its collection of sherds as a "Ceramic Depository for the Southwest." A special room in the Research Center at the Museum of Northern Arizona has been provided to house the approximately 9000 sherds. Each archaeologist who describes a Southwest pottery type or ware is invited to place specimens in the Depository as examples. Rules for the Depository are published in *Plateau* for October, 1955 (Vol. 28, No. 2).

GREAT BASIN

The second Great Basin Archaeological Conference met at the Southwest Museum, Los Angeles, on August 31 and September 1. Ruth Simpson of the Southwest Museum was chairman. Due to the length of the program it is not possible to report the meeting in detail. A total of 19 field reports was presented and 2 symposia were held — one on Pleistocene Archaeology and one on Artifacts versus Naturifacts. In addition, papers on related sciences were given, including geology, biology, and climatology. Effective displays were arranged for exhibit of specimens from the sites reported.

From 60 to 80 people were present at the formal sessions. The 1956 meeting will be in Salt Lake City, with Jesse D. Jennings of the University of Utah as chairman.

UTAH. The University of Utah summer field school, under the direction of Jesse D. Jennings and his assistant, Dee C. Taylor, excavated 2 Fremont culture open village sites between Salina and Emery, Utah. At one site, Poplar Knob, 4 rectangular houses with a total of 5 rooms were excavated. All had coursed masonry walls and had been built on the surface of an isolated knoll. The artifact yield was small. The second site, called the Old Woman site, was more rewarding in that 3 types of structures were present. There were 3 round pit houses, each about 2 feet deep with plastered walls, forming an arc at the edge of the site. Centrally were 2 contiguous rectangular jacal houses which had been built on the ground surface. One had burned and was rebuilt with coursed adobe. Also in the central part of the site were 2 coursed adobe rectangular granaries (also surface structures). Of special interest were 11 complete pottery vessels and 4 clay figurines. The latter had been accidentally fired when a house burned. They closely resemble figurines reported by Morss from Range Creek Canyon. These excavations greatly increase our knowledge of the Fremont culture since only one other open village site has been excavated, and it was much farther from the area where this culture was first defined. The material is being prepared for publication by Taylor.

The Utah Statewide Archaeological Survey under the direction of James H. Gunnerson completed a second year in the survey of eastern Utah, exclusive of the Anasazi area. Work in summer, 1955, was centered in the drainage of the Dirty Devil River with limited time spent in surrounding areas. Over 100 new sites were

located, most of them assignable to the Fremont culture. Gunnerson also spent a month assisting with pipeline salvage archaeology in eastern Utah.

Charles Dibble, collaborating with Arthur J. O. Anderson of the Museum of New Mexico, has continued the translation of the *Florentine Codex*. Book XII of Sahagun is in press and translations of Books IV, V, and IX are in progress. Of special interests to archaeologists is his clarification of the description of lost-wax casting of gold.

PACIFIC COAST

WASHINGTON. Douglas Osborne of the University of Washington reports that the archaeological survey of the coastal strip of Washington's Olympic Peninsula resulted in locating a number of important archaeological sites. Wave action is rapidly destroying a number of these sites, and it is hoped that excavations can be undertaken in this important area beginning in 1956. The work was carried out under a contract with the National Park Service.

The Washington State Parks and Recreation Commission supported historical archaeological research at Old Fort Simcoe, located on the Yakima Indian Reservation. The party was led by Edward Larabee, and was made up of students from the University of Washington and other institutions. Archival work and excavation were combined to attack the problem of the location of older and original buildings of the fort. These, when accurately located, will be partly restored or marked for visitors.

The University of Washington, the Wasco County Museum Commission, and some members of the Oregon Archaeological Society have been cooperating in an attempt to salvage some of the archaeological remains which will be inundated by the rising pool of The Dalles reservoir. A great deal of destruction is currently going on through construction activities associated with building the dam and relocating the railroad. Robert Butler, University of Washington graduate student, has been directing the salvage work. One of the major problems in this area has been the constant irritation of the many, and often militant, pot hunters.

OREGON. A full field season of work was carried out by Luther Cressman of the University of Oregon at the site at Five-Mile Rapids, about 5 miles east of The Dalles on the Oregon shore of the Columbia River. The season of 1953 had been spent on another part of this site and that of 1954 on this section. The 1955 season was devoted to securing a greater horizontal exposure in the deeper levels of the site. The work at this site had a 2-fold function: (1) salvage in the area of the reservoir of The Dalles dam, and (2) study of this area for its bearing on the problem of the relation of the cultures of the Intermontane area to these of the Oregon Coast, in the project for the study of the prehistory of the Oregon Coast. The 1955 work was supported by a grant from the National Science Foundation for the Oregon Coast prehistory project.

The geological evidence indicates that at the early occupation of the site the river level was higher than now. Molluscan remains from the earlier levels are of a type now found in a cooler climate than presently characteristic of The Dalles area. The avifauna from early levels contains condors, *Coragyps occidentalis*, cormorants, gulls, bald eagles, and a few waterfowl. Other faunal remains include both marine and terrestrial forms from the several ecological areas which meet just west of the site. Salmon vertebrae occur in great numbers along with the other animal remains.

Examples of cultural change throughout the levels are: bolas in the level of the bird bones but lacking in the upper levels; the method of stone implement manufacture, from percussion to pressure; no discernible fireplaces to well-developed ones; ground stone tools to ground and sculptured ones; an unknown method of disposal of the dead through burial to cremation; casual throwing out the food debris to disposal outside of the site.

The occupation of the site was continuous from the earliest period of use to the end but the incidence varied. What appeared to be a geological disconformity in the 1954 excavation proved not so on the basis of the more extensive evidence from 1955. The best estimate of the beginning date of use of the site, based on geological and paleontological evidence, is late Pleistocene, while the cremations postdate 1820 since trade goods of that date were with a burial under cremation debris forming the top of the fill. Radiocarbon dates will be secured to give a chronological series to which the various parts of the fill can be related.

CALIFORNIA. During the summer, F. A. Riddell of the University of California Archaeological Survey, conducted an extensive excavation of a large habitation site in Lassen County, California (Las-7). The site afforded evidences of stratification, and this, taken with its unusual depth for the area and the large number of artifacts associated with both burials and cremations, is expected to make it an extremely important site in the interpretation of early Great Basin — Northeastern California interrelationships.

R. F. Heizer was engaged during August in a preliminary survey of sites in the Humboldt Valley, Nevada, in anticipation of a field research project in 1956 which would aid in tying together some of the loose ends of problems still remaining in the region.

A. B. Elsasser continued the survey of the Central Sierra Nevada instituted in 1952 by the Archaeological Survey. Approximately 30 sites in California and Nevada were located in 1955. These sites fill a gap in Alpine and Mono counties in California and Douglas County in Nevada. The immediate goal of the survey plan in this region is to determine if possible the extent of the Kings Beach culture, a probable late prehistoric or protohistoric Washo culture, and to discover whether or not the range of the Martis culture, the presumed earlier culture in the area, was similar to that of Kings Beach.

The excavation of a large habitation site in Berryessa Valley, Napa County, California, was completed by J. A. Bennyhoff, A. E. Treganza, and A. B. Elsasser, under contract with the National Park Service.

A. E. Treganza excavated in several shellmounds around San Francisco Bay in an effort to establish the exact landfall of Sir Francis Drake in 1579. No additional direct evidence was uncovered to indicate that San Francisco Bay was the spot, although several isolated finds in Marin County still serve to leave the question in abeyance.

A field party of 4 from the University of Southern California — William J. Wallace, Edith S. Taylor, John Peter Redwine, and George Knitzman — conducted an archaeological survey in the Grapevine Mountains in Nye County, Nevada, continuing a survey of Death Valley National Monument under the sponsorship of the National Park Service. Forty-nine sites were located, at least half of which were rock shelters. The majority of remains were left by the recent Shoshonean peoples, although one site yielded evidence of an earlier occupation.

A revisit to the Tule Springs site in southern Nevada by an expedition from the Southwest Museum resulted in the locating and excavation of an additional number of ash beds, including a pit where one or more camels had been cooked. These ash beds, like those previously found, contained the split and broken long bones of a variety of extinct animals, including mammoth and camel. Only one unmistakable stone artifact was found on this trip. This was a biface chipped implement, perhaps unfinished. In a side canyon some distance from the main camp site, a large part of the skeleton of a mammoth was found. Near the remains of the skull and on the same level, a small bed of charcoal, perhaps a contemporary fire of human origin, was found. The expedition mapped and photographed the most important localities. Members of the expedition believe that the site is pre-Mankato in age.

LOWLAND SOUTH AMERICA

ARGENTINA. In February and March of 1955, O. F. A. Menghin investigated sites in the Province of Chubut. Two large rock shelters with paintings of the so-called "grecas" style were located about 100 km. west of the town of Trelew on the lower Chubut River, where a new dam is under construction. One of these also contained cultural refuse a meter in depth, containing a nonceramic lithic industry of the Tehuelchean type. More detailed excavation is planned here. A site in which the petroglyphs were drawn on fallen rocks was found at Las Plumas, about 190 km. west of Trelew. These are of a more recent style, which is also found in Santa Cruz, Neuquen, and Cordoba provinces. In the vicinity of Las Plumas is a typical Tehuelchean surface site corresponding to Bird's Phase IV. Enormous shell middens on the Valdez Peninsula, containing *Mytilus* shells and a large number of human skeletons, are also for the most part of Tehuelchean origin. One with fewer molluscs belongs to Bird's Phase V.

BRAZIL. Archaeological reconnaissance in the Rio Maracá area of Brazilian Guiana by Peter Paul Hilbert has revealed another burial cave with anthropomorphic urns of the distinctive Maracá style. Hilbert revisited the sites reported by Ferreira Penna and Lima Guedes and in one of these found red and white paintings on the rock wall showing a series of heads similar to those modeled on the burial urns. No habitation sites could be found, and all the burial sites were disturbed or largely destroyed.

The Museu Paraense "Emilio Goeldi" in Belém, Brazil, has been taken over by the federal government as the headquarters for the Instituto Nacional de Pesquisas de Amazonia. The outlook is good for a return to the position the museum held in the late 19th century as the center of Amazonian research. Eduardo Galvão has been put in charge of the Division of Anthropology. Peter Paul Hilbert has left his position in the Territory of Amapá to join the Instituto staff.

CARIBBEAN. Investigation of early historic sites continues to be a field of active archaeological interest. Excavation at Sevilla la Nueva (circa 1510-1540), under the direction of C. S. Cotter for the Institute of Jamaica, (See AMERICAN ANTIQUITY, Vol. 20, No. 1, p. 94.) has outlined the first unit of the site, which appears to be a house with an enclosed, mortar-paved courtyard. The brick-lined well that yielded a series of Gothic sculptures is in the patio, while another brick-lined well or cellar (as yet uncompletely excavated) is within the house. The house structure comprises 2 or 3 ground floor rooms with every indication of a second story and perhaps more. This structure has been tentatively identified as the "Spanish Castle" with a "tower" noted by Sir Hans Sloan in the late 17th century. Work is planned to continue steadily. The present excavations are now being fenced to protect them. The archaeological problem has been confused by the robbing of brick and cut stone from the ruins and the subsequent dumping of 18th and 19th century English refuse from the Seville Great House plantation. However, the lower levels, floors, and ground level outside the walls yield typical Taino pottery and Spanish ceramics, coins, and other artifacts of the early 16th century.

VENEZUELA. J. M. Cruxent, Director of the Museo de Ciencias Naturales in Caracas, and Irving Rouse, of Yale University, conducted a series of test excavations in eastern Venezuela during August and September. They are preparing a joint paper on the archaeological chronology of Venezuela, and their excavations were intended to fill gaps in this chronology. They obtained a 4-period stratigraphy in the vicinity of the city of Carúpano and less complete sequences in the central Llanos, around Barcelona, and on the island of Cubagua. A number of charcoal samples were obtained for analysis by the Geochronometic Laboratory at Yale University. The cultural remains indicate several new relationships with the West Indies; for example, one of 2 nonceramic cultures encountered may be ancestral to the Ortoire culture of Trinidad, previously excavated by Rouse and John M. Goggin.

HIGHLAND SOUTH AMERICA

ARGENTINA. In February and March, 1955, Alberto Rex Gonzalez undertook investigations in the Laguna Blanca zone, Departamento de Belen, Catamarca Province, Argentina. A number of important sites had been located the preceeding year and some of these were excavated. Rectangular walled field enclosures were found to belong to several different cultural periods, among them La Cienaga phase of Barreales culture. Houses associated with La Cienaga phase are oval, semi-subterranean structures with walls of stone without mortar and a stone-lined entrance. They are scattered among the field enclosures. Dwellings and graves of La Cienaga and graves of Conderhuasi were also excavated in the Corral Blanco zone.

Over the past several years, Pedro Krapovikas has surveyed several parts of the Argentine Puna. At Tebenquiche, on the shore of the Salar de Antofalla (Catamarca Province), he excavated in a large ruin composed of extensive agricultural terraces on the hillside, rectangular field enclosures bounded by low mortarless stone walls on the level land, and among the latter, circular house remains. A small cemetery contained elliptical graves lined with flat stones and covered by a counterfeit grave, also built of stones. Associated with these were pottery pipes, cylindrical vessels of black or gray pottery, a few metal objects including 2 of gold, and a vessel with affinities to the Candelaria culture. Surface sherds included Barreales type incised and polychrome decoration.

The excavation and reconstruction of the Pucara (fortress) of Tilcara, near the village of the same name in the Province of Jujuy, is the first restoration of an aboriginal site attempted in Argentina. It is being supervised by Eduardo Casanova on behalf of the Faculty of Philosophy, University of Buenos Aires, following the idea of the late Salvador Debenedetti. The hills occupied by the site and some of the adjoining land have been expropriated by the Provincial government and granted to the Faculty of Philosophy. A general topographic survey of the site, areal photography, general clearing, and exploration to locate old paths, graves and dwelling units have been completed, and 20 of the dwellings have been reconstructed. Plans include the construction of life size figures engaged in everyday pursuits, to be placed in the houses, and the erection of a regional museum and a residence for the use of those who wish to undertake research in the region.

CHILE. Jorge Iribarren, Assistant to the Director of the Museo Arqueologico de La Serena, reports the discovery of a site of the "Shell Fish-hook Culture" in Guanaqueros. This confirms Bird's supposition of the southward extension of this earliest preceramic maritime culture in northern Chile.

PERU. Frederick Engel has been excavating the La Capilla site in San Bartolo, 53 km. south of Lima. A test cut in one of the main shellmounds at the site revealed a dense accumulation of refuse with approximately 3 m. of Inca-Rimac refuse overlying more than 6 m. of Chavinoid-Ancon debris. Engel hopes to encounter the preceramic level underlying the latter. During the preliminary work some interesting Chavinoid architecture was cleared and a new "Red-on-red" ware, apparently of the Formative epoch, was discovered. Excellent examples of Chavinoid-Ancon ceramics, bone, and shell work were also found.

Alan R. Sawyer, Assistant Curator of Decorative Arts of the Chicago Art Institute, arrived in Lima at the beginning of June. The Chicago Art Institute has recently acquired the important Wasserman San Blas and Gaffron collections of Peruvian prehistoric art, and Sawyer planned to spend some 3 months in Peru and Bolivia gathering relevant archaeological information. He also accompanied Alfred Kidder II during a portion of the University of Pennsylvania field project.

Louis Stumer reports that at the Cerro la Campana site in the Chillón Valley (north of Lima) he found a primitive variety of ceramics of the Maranga style in grave association with ware of the Playa Grande 3 type (similar to the type found in the top layers of strata cuts in Playa Grande and Marquez). The significance of this linkage is that it demonstrates the coexistence of Playa Grande (Interlocking) in the Chillón Valley with Maranga (Proto-Lima) in the Rimac.

A second round table discussion on Peruvian archaeological nomenclature is being organized by the Sociedad para la Antropologia Peruana in Lima. The discussions will be based upon the tentative recommendations adopted at the Lima Conference held in January 1953 under the auspices of the Sociedad.

BOLIVIA. Alfred Kidder II arrived in Bolivia and studied the spread of Tiahuanaco in the La Paz-Puno region. Work is being carried out under University of Pennsylvania Museum auspices, with the cooperation of the Bolivian authorities.

AWARDS TO A. V. KIDDER

On November 2, 1955, *The Order of the Quetzal*, in the Grade of Commander, was awarded to A. V. Kidder, in the Hall of the Americas of the Pan American Union, Washington, D.C. The award was made by the Guatemalan Secretary of State, Dr. Domingo Gorcolea Villacorta, in the presence of Guatemala's President Castillo Armas. This high honor was bestowed on Dr. Kidder by the Council of the Order of the Quetzal of Guatemala in recognition of his "scientific and altruistic work in archaeology" and the contribution that this work has made to the understanding of Guatemala's historic and prehistoric background.

During the summer of 1955 Dr. Kidder was the recipient, in absentia, of an honorary doctorate from the University of San Carlos of Guatemala, one of the oldest institutions of higher learning in the New World.

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DE LAGUNA, FREDERICA

1953 Some problems in the relationship between Tlingit Archaeology and Ethnology. In "Asia and North America: Transpacific Contacts," assembled by M. W. Smith. *Memoirs of the Society for American Archaeology*, No. 9, pp. 53-7 Salt Lake City.

HEIZER, R. F. AND FRANKLIN FENENGA

1939 Archaeological Horizons in Central California. *American Anthropologist*, Vol. 41, No. 3, pp. 378-99. Menasha.

MACGOWAN, KENNETH

1950 *Early Man in the New World.* Macmillan, New York.

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